MONTHLY WEATHER REVIEW.

Prof. CLEVELAND ABBE, Editor.

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INTRODUCTION.

This annual summary for 1894 is based upon data received from cooperating weather services, and from about 1,600 stations occupied by regular and voluntary observers of the Weather Bureau. The statistical tables have been prepared by the Division of Records and Meteorological Data, A. J. Henry, Acting Chief; the text and editorial work by Prof. Cleveland Abbe.

The title page and contents of the REVIEW for 1894 (Vol. XXII) are also published herewith.

GENERAL CLIMATIC CONDITIONS.

ATMOSPHERIC PRESSURE.

The mean pressure for 1894, as shown by the mercurial barometer, reduced to sea level but not to standard gravity, is shown on Chart I. The correction for the variation of gravity with latitude can easily be made by using the numerical values given for each degree of latitude on the right-hand side of the chart. The method of reduction to sea level adopted in the preparation of this chart is that which is used by the Weather Bureau in the preparation of the daily and monthly charts, and is known as Professor Hazen's method. As this differs from the method recommended by the International Meteorological Conference, the Editor has requested Professor Hazen to prepare a short explanation, which will be found on a subsequent page, and which gives the heights and reductions actually used at each station of the Weather Bureau during this year. By means of this table it becomes possible to approximately re-reduce, according to the international tables, if so desired. Approximate methods of reduction adapted to daily telegraphic reports are not necessarily the most appropriate for the reduction of monthly and annual mean pressures.

The isobars on Chart I show that the mean annual pressure has been highest during 1894 over the south Atlantic and east Gulf States, the maximum being 30.13 in Georgia; the small area of lowest pressure, 29.90, appears, as usual, at the head of the Gulf of California, and, as has been previously explained, is probably a branch from the area of low pressure over the equatorial Pacific. A small region of high pressure extends eastward over Oregon into Utah. The general arctic area of low pressure, 29.95, or less, extends along our northern boundary from British Columbia to Newfoundland.

MOVEMENTS OF CENTERS OF AREAS OF HIGH AND LOW PRESSURES DURING 1894.

The location of an area of high or low pressure is, to a limited extent, affected by the method adopted in the reduction of the barometer to sea level. The following summary, therefore, holds good, especially in connection with the method adopted by the Weather Bureau for the past six or eight years. The average velocities of movements of the centers of the areas are given by paths and by days in the individual tables of the successive MONTHLY WEATHER REVIEWS, and the monthly means are here collected together.

Month.	High areas.				Low areas.			
	No. of paths.	Hourly velocity.	No. of days.	Hourly velocity.	No. of paths.	Hourly velocity.	No. of days.	Hourly velocity.
		Miles.		*Miles.*		*Miles.*		*Miles.*
January	17	24.6	61.5	25.7	16	33.0	42.0	31.2
February	9	25.2	36.0	16.2	15	35.3	40.5	31.4
March	15	21.1	39.0	20.0	16	31.0	49.0	30.4
April	12	19.0	41.0	18.3	14	20.3	45.0	18.8
May	8	28.6	19.5	27.4	10	20.0	29.5	18.4
June	6	21.7	20.5	18.7	17	19.0	38.0	19.0
July	5	15.7	31.0	15.7	11	17.0	38.5	17.3
August	9	13.8	37.0	14.4	16	19.6	57.5	19.0
September	12	21.2	54.5	21.1	11	20.0	53.0	17.9
October	12	27.2	43.0	26.0	15	19.0	76.0	18.8
November	17	29.9	54.0	31.8	16	24.9	49.5	30.5
December	15	26.9	53.5	24.2	17	28.6	45.5	29.5
Annual total.	137	274.9	490.5	259.5	174	287.7	564.0	282.2
Average	11.4	22.9	40.9	21.3	14.5	24.0	47.0	23.5

In general, the rapid movement of high and low areas during the winter months is well shown by this table.

TEMPERATURE.

The mean annual temperature is shown by the isotherms on Chart I. These temperatures relate to the surface of the ground. The individual figures are given in Table I of data for Weather Bureau stations. The lowest annual averages within the United States were: Williston, 40.4; St. Vincent, 37.7; Moorhead, 30.8; Duluth, 41.5; Burlington, 42.6; Eastport, 41.6. The highest averages were: Yuma, 71.4; Corpus Christi, 70.7; Key West, 76.7; Jupiter, 73.8.

The mean annual temperature was above the normal in New England, the middle and south Atlantic States, and generally throughout the interior of the country; it was slightly below the normal in Florida and the Gulf States, the plateau and Pacific coast regions.

The maximum temperatures are shown both by the upper figures and the full lines on Chart II; the minimum temperatures of the year are shown by the lower figures and the dotted lines on the same chart. The absolute range of temperature during the year is easily obtained by comparing the full and dotted lines on this chart. In general, maximum tempera-

tures exceeding 100° occurred from the Mississippi Valley westward to the Rocky Mountain slope up to an altitude of 3,000 or 4,000 feet; the absolute maximum for the whole country was 113° at Yuma.

Minimum temperatures of 35° or less occurred in the eastern portion of North and South Dakota; the minimum line of freezing temperature, 32°, extended northward to the immediate coast of California and the southern point of Florida. The stations of large annual range of temperature were Northfield, 124; Sault Ste. Marie, 120; North Dakota, on the average, 136; St. Paul, 125; Des Moines, 131; Valentine, 141; Huron, 143; Pierre, 136; Miles City, 133; North Platte, 129; Idaho Falls, 124.

The small annual ranges were: Hatteras, 69; Jupiter, 67; Key West, 47; San Diego, 58; Los Angeles, 67; San Francisco, 58; Eureka, 51; Tatoosh Island, 54.

The accumulated departures of average monthly temperatures are given in Table III, and show that there was a progressive accumulation of temperature in excess of the normal in most of the meteorological districts. In other cases, such as Key West and the Gulf States, the plateau and Pacific districts, the accumulation of the early part of the year diminished or even became a deficit before its close.

PRECIPITATION.

The total annual fall of rain and melted snow for 1894 is shown on Chart III. The greatest precipitation was 114 inches at Tatoosh Island, and the least was 2.95 at Yuma, 4.24 at El Paso, and 4.35 at San Diego.

An annual rainfall above 60 inches occurred on the immediate coast of Oregon and Washington and over a small portion of the Florida Peninsula. An annual rainfall of less than 20 inches prevailed from Manitoba west to Alberta and southward to Mexico.

The accumulated departures of total monthly precipitations from the normal values are shown in Table IV, from which it appears that a deficit has prevailed, except over the northern plateau and Pacific coast districts and, in general, the deficit has been increasing from month to month throughout the year.

WIND.

The prevailing direction of the wind, namely, that which occurred most frequently, is given for each station in Table I; the annual resultant wind, deduced from observations at 8 a. m. and 8 p. m., is given in Table V. These resultants are also presented graphically on Chart I in connection with the barometric pressures to which they are intimately related.

The prevailing and resultant winds, deduced from the hourly readings of the self-registering anemometers, are given in Table VI; the explanation of the columns and the method of computation were given in the MONTHLY WEATHER REVIEW for December, 1893.

SENSIBLE TEMPERATURE.

The mean temperature of the wet-bulb thermometer at 8 a. m. and 8 p. m. is given in Table VII. This is the so-called sensible temperature and represents, approximately, that temperature to which the moisture, temperature, and wind of the atmosphere tend to reduce the temperature of the skin while the internal heat of the body and the protection offered by the clothing oppose such reduction. This is, therefore, the temperature proper to be considered in studying the relation between climate and hygiene. The wet-bulb thermometer from which this temperature is read is whirled at the rate of about ten feet per second within the light thermometer shelter that protects it from direct radiation.

MOISTURE.

The actual quantity of moisture in the air has been desired for special studies in irrigation, and is also needed in discussing the question of the density and weight of the atmosphere, the reduction to sea level, the formation of cloud, rain, and fog; this quantity depends essentially upon the dew-point, the mean value of which is given in Table I. In response to a request for information as to the total quantity of aqueous vapor in the atmosphere a memorandum was recently prepared, which is published for general information on a following page of this summary.

FOREIGN DATA.

Through the kind cooperation of the Superintendent of the Meteorological Office of the Dominion of Canada, the annual summary of data for Canadian stations is given in the following table, and is incorporated in the annual charts.

Annual summary of Canadian stations for 1894.

Station.	Reduced pressure.	Mean temperature.	Total precipitation.	Prevailing winds.
	Inches.	°	*Inches.*	
St. Johns, N. F.	29.93	39.3	56.35	n.
Sydney, C. B. I.	29.99	40.9	42.78	sw.
Halifax, N. S	30.02	42.4	45.32	n.
Grand Manan, N. B.	30.01	42.9	35.30	w.
Yarmouth, N. S	30.02	42.8	35.20	n.
Saint Andrews, N. B	29.98	41.1	30.79	nw.
Charlottetown, P. E. I	29.98	41.0	34.96	w.
Chatham, N. B	29.98	38.1	33.03	w.
Father Point, Que	29.97	34.8	28.06	w.
Quebec, Que	30.00	38.6	42.17	w.
Montreal, Que	30.00	42.3	30.97	sw.
Rockliffe, Ont.	29.98	37.9	29.82	nw.
Kingston, Ont.	30.01	44.5	29.53	sw.
Toronto, Ont.	30.03	45.8	29.04	w.
White River, Ont.	30.01	32.7	24.74	w.
Port Stanley, Ont	30.04	46.1	30.54	w.
Saugeen, Ont	30.01	44.2	28.16	w.
Parry Sound, Ont.	30.00	41.9	39.39	w.
Port Arthur, Ont	29.96	35.9	22.52	w.
Winnipeg, Man.	29.96	35.2	18.12	nw.
Minnedosa, Man.	29.94	33.8	15.20	w.
Qu'Appelle, Assin.	29.95	34.5	12.52	s.
Medicine Hat, Assin.	29.92	41.2	13.14	sw.
Swift Current, Assin.	29.96	38.0	9.66	w.
Calgary, Alberta	29.91	37.2	11.71	w.
Prince Albert, Sask.	29.94	31.5	9.25	nw.
Edmonton, Alberta	29.93	35.2	16.13	nw.
Battleford, Sask.	29.91	33.1	13.47	se.
Spences Bridge, B. C.	29.96	48.0	9.17	sw.
Hamilton, Bermuda	30.15	69.8	58.70	s.

Through the kindness of Mr. G. A. Fischer, observer at the office of the Mexican International Railroad Company at Ciudad Porfirio Diaz, Mexico, the following summary of observations at that place, elevation 7,222, is presented:

1894.	Rain.	Maximum temperature.		Minimum temperature.	
		Extreme.	Average.	Extreme.	Average.
January	0.37	83.0	69.1	26.0	54.7
February	.....	88.5	68.0	28.0	43.0
March	0.10	93.0	82.0	36.5	53.9
April	0.91	98.5	88.6	53.0	67.8
May	5.46	98.0	88.9	62.5	72.1
June	0.28	99.0	90.5	66.0	75.1
July	0.06	104.0	96.6	74.5	78.1
August	6.70	103.0	92.8	70.5	76.8
September	4.70	96.5	89.3	66.5	74.3
October	0.07	93.5	85.9	43.0	66.0
November	0.01	85.0	74.9	36.0	48.9
December	0.04	81.0	69.2	25.5	47.1

The total rainfall during the last four years was as follows: 1891, 12.14; 1892, 20.12; 1893, 6.23; 1894, 18.70 inches.

Through the kindness of Capt. F. A. Chaves, Director of the Observatory at Ponta Delgada, San Miguel, Azores, we are enabled to present the summary of observations during 1894 at that place, given in Table II. The height of the barometer is 17 meters (56 feet); the pressure is reduced to sea level, but not to standard gravity, and is expressed in millimeters; the reduction to standard gravity is —0.4 mm.; the temperatures are expressed in degrees centigrade; the total rainfall and total evaporation are given in millimeters.

FREQUENCY OF THUNDERSTORMS.

The successive MONTHLY WEATHER REVIEWS have given, for each day and each State, the number of thunderstorms reported to the Bureau. In order to ascertain the relative frequency of thunderstorms it is necessary to know how many observers report all the storms, or nearly all of those that occur in their neighborhood; it is also necessary to know whether these observers count distant lightning or all storms that merely approach near their stations. It is believed that most of the observers adhere to the rule that a thunderstorm is to be recorded whenever thunder is heard even once, independent of any consideration as to the apparent severity or distance of the storm, or the occurrence of lightning, rain, hail, or wind at the station. These records, therefore, give simply the frequency of the first thunder. Occasionally successive thunderstorms may occur so near together that an observer may be in doubt as to whether a given peal of thunder belongs to one storm or the other. The fourth column of the following table gives, for each State, the approximate estimated number of stations that are believed to have reported all cases of thunder during the year; these numbers may sometimes be too large, but it does not seem possible to ascertain the number more precisely; in general, these thunderstorm observers are decidedly less numerous than the total number of meteorological observers enumerated in the successive REVIEWS.

Frequency of thunderstorms and auroras during 1894.

State.	Area.*	Stations.		Reduction factor.	Observed per station.	
		Needed.	Reporting.		Thunderstorms.	Auroras.
Alabama	5.1	128	40	3.2	8.0	0.02
Arizona	11.4	385	30	1.3	7.0	0.07
Arkansas	5.2	130	35	4.3	15.1	0.03
California	15.8	395	115	3.4	1.0	0.36
Colorado	10.4	260	75	3.4	8.8	0.07
Connecticut	0.5	12	20	0.6	12.6	2.55
Delaware	0.2	5	6	0.8	12.5	3.33
District of Columbia	0.01	0.2	2	0.5	10.5	2.50
Florida	5.9	148	30	4.9	42.2	0.00
Georgia	5.8	145	40	3.6	12.6	0.05
Idaho	8.6	215	20	10.7	6.3	1.50
Illinois	5.5	138	50	2.7	16.4	1.58
Indiana	3.4	85	35	2.4	10.0	1.97
Indian Territory	0.9	172	5	34.4	8.0	0.00
Iowa	5.5	138	75	1.8	10.7	2.40
Kansas	8.1	202	65	3.1	10.6	0.60
Kentucky	3.8	95	35	2.7	8.3	1.03
Louisiana	4.1	102	40	2.6	30.2	0.05
Maine	3.5	88	15	5.9	12.8	6.40
Maryland	1.1	28	25	1.1	16.4	1.60
Massachusetts	0.8	20	65	0.3	7.7	3.08
Michigan	5.6	140	60	2.2	10.3	2.57
Minnesota	8.4	210	60	3.4	15.4	7.25
Mississippi	4.7	118	40	3.0	15.0	0.02
Missouri	6.5	162	80	2.0	21.1	0.85
Montana	14.4	360	20	1.8	8.1	4.75
Nebraska	7.6	190	75	2.6	5.6	1.51
Nevada	11.2	280	30	9.3	8.0	1.57
New Hampshire	0.9	22	20	1.1	13.4	7.90
New Jersey	0.8	20	50	0.4	14.0	2.12
New Mexico	12.1	302	20	1.5	5.0	0.05
New York	4.7	118	60	2.0	10.9	2.60
North Carolina	5.1	128	50	2.6	19.3	0.66
North Dakota	7.5	185	30	6.2	5.9	9.77
Ohio	4.0	100	125	0.8	14.1	1.70
Oklahoma	.....	.....	15	.....	6.6	0.07
Oregon	9.5	238	45	5.3	4.4	1.26
Pennsylvania	4.6	115	55	2.1	19.3	1.77
Rhode Island	0.1	2	6	0.3	10.8	2.00
South Carolina	3.4	85	35	2.4	20.5	0.77
South Dakota	7.6	190	40	4.8	6.4	3.85
Tennessee	4.6	115	30	3.8	19.7	0.80
Texas	27.4	685	70	9.8	8.0	0.07
Utah	8.4	210	25	8.4	5.8	0.72
Vermont	1.0	25	12	2.1	17.7	5.17
Virginia	6.1	152	35	4.3	11.6	0.80
Washington	7.0	175	45	3.9	4.6	1.87
West Virginia	2.3	58	30	1.9	11.3	0.73
Wisconsin	5.3	132	60	2.2	12.5	5.02
Wyoming	9.8	245	10	24.2	3.9	2.10

* The areas are expressed in units of 10,000 square miles or 100 miles square.

Table VIII gives the total number of thunderstorms reported for each month and for the year. These numbers, however, as they now stand, must not be considered as indicating the relative frequency of the storms in each State. To obtain this item it is necessary to consider the area of each State as compared with the area actually covered by the observers. As distant thunder may be heard by an observer 10 or 12 miles away, it may be that each station records all the cases of thunder occurring within an area of 400 square miles, corresponding to a radius of little more than 11 miles. In order, therefore, to cover the whole of any one State we need the number of stations given in the third column of the preceding table. But the actual number of stations is only a small percentage of this total, and the numbers in the fifth column are the factors by which the recorded number of thunderstorms, for any month or year, should be multiplied in order to obtain, even approximately, the number of storms that occur in any given State. This multiplication will, of course, produce numbers much larger than those given in Table VIII. If, however, we forego the study of the total number of storms that probably occurred within each State we may get at "the relative frequency of storms per station" in each part of the country by dividing the numbers given in Table VIII by the number of stations; thus, in Alabama the average is 8 storms per station for the whole year, and the numbers expressing this annual frequency per station are given in the sixth column of the preceding table.

The difficulty attending the study of the total number of thunderstorms in any given State and the fact that such storms occur over large regions almost simultaneously have led to the consideration of the number of days on which thunderstorms are reported, and these numbers may also be adopted as indicative of the relative frequency of such storms. The data for this purpose are given in Table IX, but here again we must consider the relative areas of the respective States, and the total number of days must either be multiplied by the factor given in column 5, or divided by some function, as yet undetermined, of the number of stations.

FREQUENCY OF AURORAS.

The relative frequency of auroras may be studied from the data for each day and State in the successive MONTHLY WEATHER REVIEWS. The total number of observers faithfully reporting all auroras is undoubtedly less than the number reporting thunderstorms, but in the absence of precise data it is recommended that the numbers given in the preceding paragraph for thunderstorm observers be adopted as relative numbers in studying the aurora record. In order to ascertain the relative frequency of auroras it is necessary to consider the influence of cloudiness upon the visibility of the aurora, or in other words, we must know from some independent source of knowledge whether the aurora is near the observer, and therefore a local phenomenon, or whether it is distant, so that over a large region of country all are observing the same auroral light. In the latter case a cloudy sky must be considered as hiding what would otherwise be a visible aurora; in the former case the cloudy sky could not be considered as having any influence on the visibility of the aurora. It is very rare that auroras are recorded below the clouds, and none have ever yet been recorded as visible by observers above the clouds. It is, therefore, most proper to discuss the frequency of the aurora as though the light emanated from the cloud region, so that a cloudy sky is not to be reckoned as hiding the aurora. From this point of view also the report of each observer must be considered as bearing on a phenomenon that is as local as a thunderstorm, and the statistics of auroras must therefore be treated in the same way as those for thunder. (See page 254 for an analysis of the observations at Willets Point, N. Y.)

The auroral data given in the tables of the respective MONTHLY REVIEWS are collected in Tables X and XI of this Annual Summary. Table X gives the total number of auro-

ras reported and Table XI the total number of days on which auroras occurred. The annual sum total given in Table X can be divided by the number, or relative number of stations, which divisors are the same as those for thunderstorms; the quotients or relative frequency of auroras per station are given in the last column of the preceding table.

REDUCTION OF BAROMETER READINGS TO SEA LEVEL.

[Prepared by request, April 4, 1895, by Prof. H. A. HAZEN.]

Table for reducing barometer readings to sea level as used during 1894.

Stations.	Height.	−30°	−20°	−10°	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Feet.													
Abilene, Tex.	1,749	.....	.....	.....	2.06	2.01	1.97	1.93	1.90	1.86	1.83	1.80	1.76	1.73
Albany, N. Y.	85	.....	.11	.11	.10	.10	.10	.10	.10	.09	.09	.09	.09	.09
Alpena, Mich.	609	.78	.77	.75	.73	.72	.70	.69	.68	.66	.65	.64	.63	.62
Amarillo, Tex.	3,691	4.38	4.30	4.22	4.14	4.06	3.99	3.92	3.85	3.79	3.72	3.66	3.60	3.55
Atlanta, Ga.	1,131	.....	.....	.....	1.34	1.31	1.29	1.26	1.24	1.22	1.19	1.17	1.15	1.13
Atlantic City, N. J.	33	.....	.....	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Augusta, Ga.	180	.....	.....	.....	.22	.21	.21	.21	.20	.20	.19	.19	.19	.18
Baker City, Oreg.	3,430	.....	3.97	3.90	3.83	3.76	3.70	3.64	3.58	3.52	3.46	3.41	3.36	3.31
Baltimore, Md.	179	.....	.....	.22	.22	.21	.21	.21	.20	.20	.19	.19	.19	.18
Bismarck, N. Dak.	1,681	2.10	2.05	2.01	1.97	1.93	1.89	1.86	1.82	1.79	1.76	1.73	1.70	1.67
Block Island, R. I.	27	.....	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
Boston, Mass.	125	.....	.15	.15	.15	.15	.14	.14	.14	.14	.14	.13	.13	.13
Buffalo, N. Y.	690	.88	.86	.84	.83	.81	.79	.78	.76	.75	.74	.72	.71	.70
Cairo, Ill.	359	.....	.45	.45	.44	.43	.42	.41	.40	.39	.39	.38	.37	.37
Cape Henry, Va.	21	.....	.....	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
Charleston, S. C.	52	.....	.....	.....	.06	.06	.06	.06	.05	.05	.05	.05	.05	.05
Charlotte, N. C.	773	.....	.....	.94	.92	.90	.89	.87	.85	.83	.82	.80	.79	.78
Chattanooga, Tenn.	702	.....	.....	.93	.91	.89	.88	.86	.84	.82	.81	.79	.78	.77
Cheyenne, Wyo.	6,105	7.13	6.98	6.83	6.67	6.52	6.37	6.22	6.08	5.95	5.83	5.72	5.62	5.52
Chicago, Ill.	824	1.05	1.02	1.00	.98	.96	.94	.92	.91	.89	.87	.86	.84	.83
Cincinnati, Ohio.	628	.....	.79	.77	.76	.74	.73	.71	.70	.68	.67	.66	.65	.64
Cleveland, Ohio.	740	.95	.93	.91	.89	.87	.85	.83	.82	.80	.79	.77	.76	.75
Columbia, Mo.	789	1.01	.99	.97	.95	.93	.91	.89	.87	.86	.84	.82	.81	.80
Columbus, Ohio.	824	1.05	1.02	1.00	.98	.96	.94	.92	.91	.89	.87	.86	.84	.83
Concordia, Kans.	1,410	1.77	1.73	1.70	1.66	1.63	1.60	1.57	1.54	1.51	1.48	1.45	1.42	1.39
Corpus Christi, Tex.	20	.....	.....	.....	.....	.....	.02	.02	.02	.02	.02	.02	.02	.02
Davenport, Iowa.	613	.78	.77	.75	.73	.72	.70	.69	.68	.66	.65	.64	.63	.62
Denver, Colo.	5,287	6.19	6.07	5.95	5.83	5.71	5.60	5.49	5.38	5.28	5.18	5.08	4.98	4.88
Des Moines, Iowa.	869	1.11	1.08	1.06	1.04	1.02	1.00	.98	.96	.94	.92	.91	.89	.88
Detroit, Mich.	724	.92	.90	.88	.86	.85	.83	.81	.80	.78	.77	.75	.74	.73
Dodge City, Kans.	2,523	3.08	3.02	2.96	2.90	2.85	2.79	2.74	2.69	2.64	2.60	2.55	2.51	2.47
Dubuque, Iowa.	651	.83	.81	.80	.78	.76	.75	.73	.72	.71	.69	.68	.67	.66
Duluth, Minn.	656	.85	.83	.81	.79	.78	.76	.75	.73	.72	.70	.69	.68	.67
Eastport, Me.	76	.10	.10	.10	.10	.10	.09	.09	.09	.09	.09	.08	.08	.08
El Paso, Tex.	3,813	.....	.....	.....	.....	4.19	4.11	4.04	3.97	3.90	3.84	3.77	3.71	3.65
Erie, Pa.	714	.91	.89	.87	.85	.83	.82	.80	.79	.77	.76	.74	.73	.72
Eureka, Cal.	64	.....	.....	.....	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
Fort Canby, Wash.	179	.....	.22	.22	.21	.21	.21	.20	.20	.20	.19	.19	.19	.18
Fort Smith, Ark.	492	.....	.....	.....	.59	.58	.57	.55	.54	.53	.52	.51	.50	.49
Fresno, Cal.	338	.....	.....	.....	.....	.....	.39	.38	.38	.37	.36	.36	.35	.35
Galveston, Tex.	42	.....	.....	.....	.....	.....	.05	.05	.04	.04	.04	.04	.04	.04
Grand Haven, Mich.	628	.....	.....	.77	.75	.74	.72	.71	.70	.68	.67	.66	.65	.64
Green Bay, Wis.	617	.80	.78	.76	.74	.73	.71	.70	.69	.67	.66	.65	.64	.63
Harrisburg, Pa.	377	.....	.48	.47	.46	.45	.44	.43	.42	.42	.41	.40	.39	.39
Hatteras, N. C.	11	.....	.....	.....	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
Helena, Mont.	4,108	4.83	4.74	4.65	4.57	4.49	4.41	4.33	4.26	4.19	4.12	4.05	3.99	3.92
Hannibal, Mo.	534	.68	.67	.65	.64	.62	.61	.60	.59	.58	.57	.56	.55	.54
Havre, Mont.	2,477	3.03	2.97	2.91	2.86	2.80	2.75	2.70	2.65	2.60	2.56	2.51	2.47	2.43
Huron, S. Dak.	1,310	1.65	1.62	1.58	1.55	1.52	1.49	1.46	1.43	1.41	1.38	1.36	1.33	1.31
Idaho Falls, Idaho.	4,742	5.49	5.39	5.29	5.20	5.11	5.02	4.93	4.85	4.77	4.69	4.62	4.55	4.48
Independence, Cal.	3,950	.....	.....	.....	4.41	4.33	4.25	4.18	4.10	4.03	3.97	3.90	3.84	3.78
Indianapolis, Ind.	766	.98	.96	.94	.92	.90	.89	.87	.85	.83	.82	.80	.79	.78
Jacksonville, Fla.	43	.....	.....	.....	.....	.....	.05	.05	.05	.05	.05	.05	.05	.05
Jupiter, Fla.	28	.....	.....	.....	.....	.03	.03	.03	.03	.03	.03	.03	.03	.03
Kansas City, Mo.	963	.....	1.19	1.17	1.14	1.12	1.10	1.08	1.06	1.04	1.02	1.00	.98	.96
Keokuk, Iowa.	613	.78	.77	.75	.73	.72	.70	.69	.68	.66	.65	.64	.63	.62
Key West, Fla.	22	.....	.....	.....	.....	.....	.....	.....	.02	.02	.02	.02	.02	.02
Kittyhawk, N. C.	9	.....	.....	.....	.....	.01	.01	.01	.01	.01	.01	.01	.01	.01
Knoxville, Tenn.	980	.....	1.22	1.19	1.17	1.14	1.12	1.10	1.08	1.06	1.04	1.02	1.00	.98
La Crosse, Wis.	720	.92	.90	.88	.86	.85	.83	.81	.80	.78	.77	.75	.74	.73
Lander, Wyo.	5,377	6.14	6.03	5.92	5.82	5.72	5.62	5.53	5.44	5.35	5.27	5.19	5.11	5.03
Little Rock, Ark.	302	.39	.38	.37	.36	.36	.35	.34	.34	.33	.32	.32	.31	.30
Los Angeles, Cal.	330	.....	.....	.....	.....	.....	.38	.37	.37	.36	.35	.35	.34	.34
Louisville, Ky.	525	.68	.67	.65	.64	.62	.61	.60	.59	.58	.57	.56	.55	.54
Lynchburg, Va.	685	.....	.....	.....	.83	.81	.79	.78	.76	.75	.74	.72	.71	.70
Marquette, Mich.	734	.93	.91	.89	.87	.86	.84	.82	.81	.79	.78	.76	.75	.74
Memphis, Tenn.	339	.....	.....	.....	.40	.39	.39	.38	.37	.36	.36	.35	.34	.34
Meridian, Miss.	358	.....	.....	.....	.44	.43	.42	.41	.40	.39	.39	.38	.37	.37
Miles City, Mont.	2,374	2.91	2.85	2.79	2.74	2.68	2.63	2.58	2.53	2.49	2.45	2.41	2.37	2.33
Milwaukee, Wis.	673	.86	.84	.82	.80	.79	.77	.76	.74	.73	.71	.70	.69	.68
Mobile, Ala.	57	.....	.....	.....	.07	.07	.07	.07	.07	.07	.06	.06	.06	.06
Montgomery, Ala.	257	.....	.....	.....	.32	.31	.30	.30	.29	.28	.28	.27	.27	.26
Moorhead, Minn.	935	1.20	1.17	1.14	1.12	1.10	1.08	1.06	1.04	1.02	1.00	.98	.96	.95
Nantucket, Mass.	14	.....	.....	.....	.....	.01	.01	.01	.01	.01	.01	.01	.01	.01
Nashville, Tenn.	545	.....	.69	.68	.66	.65	.64	.62	.61	.60	.59	.58	.57	.56

Table for reducing barometer readings to sea level—Continued.

Stations.	Height.	−30°	−20°	−10°	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Feet.													
New Haven, Conn.	107	.....	.....	.....	.13	.13	.12	.12	.12	.12	.11	.11	.11	.11
New London, Conn.	45	.....	.....	.....	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
New Orleans, La.	54	.....	.....	.....	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
New York, N. Y.	185	.....	.....	.....	.22	.22	.21	.21	.20	.20	.20	.19	.19	.19
Norfolk, Va.	57	.....	.....	.....	.07	.07	.07	.07	.07	.07	.06	.06	.06	.06
Northfield, Vt.	872	.....	1.08	1.06	1.04	1.02	1.00	.98	.96	.94	.92	.91	.89	.88
North Platte, Nebr.	2,841	3.45	3.38	3.31	3.25	3.19	3.13	3.07	3.01	2.96	2.91	2.86	2.81	2.76
Oklahoma, Okla.	1,239	.....	.....	1.50	1.47	1.44	1.41	1.38	1.36	1.33	1.31	1.28	1.26	1.24
Omaha, Nebr.	1,123	1.42	1.39	1.36	1.33	1.30	1.28	1.25	1.23	1.21	1.18	1.16	1.14	1.12
Oswego, N. Y.	335	.44	.43	.42	.41	.40	.39	.39	.38	.37	.36	.36	.35	.35
Palestine, Tex.	510	.....	.....	.....	.....	.60	.59	.58	.57	.56	.55	.54	.53	.52
Parkersburg, W. Va.	638	.82	.80	.78	.77	.75	.74	.72	.71	.70	.68	.67	.66	.65
Pensacola, Fla.	56	.....	.....	.....	.....	.06	.06	.06	.06	.06	.06	.06	.06	.06
Philadelphia, Pa.	117	.....	.....	.....	.13	.13	.13	.13	.13	.12	.12	.12	.12	.12
Pierre, S. Dak.	1,470	1.84	1.81	1.77	1.73	1.70	1.66	1.63	1.60	1.57	1.54	1.52	1.49	1.46
Pittsburg, Pa.	842	.....	.....	1.02	1.00	.98	.96	.94	.93	.91	.89	.88	.86	.85
Port Angeles, Wash.	29	.....	.....	.....	.....	.....	.....	.03	.03	.03	.03	.03	.03	.03
Port Huron, Mich.	639	.82	.80	.78	.77	.75	.74	.72	.71	.70	.68	.67	.66	.65
Portland, Me.	103	.....	.....	.....	.11	.11	.11	.11	.11	.10	.10	.10	.10	.10
Portland, Oreg.	157	.....	.....	.....	.19	.19	.19	.18	.18	.18	.17	.17	.17	.16
Pueblo, Colo.	4,734	.....	5.38	5.28	5.19	5.10	5.01	4.92	4.84	4.76	4.69	4.61	4.54	4.47
Raleigh, N. C.	388	.....	.....	.....	.47	.46	.45	.44	.43	.43	.42	.41	.40	.40
Rapid City, S. Dak.	3,280	.....	3.83	3.76	3.69	3.62	3.56	3.49	3.43	3.37	3.32	3.26	3.21	3.15
Red Bluff, Cal.	342	.....	.....	.....	.....	.40	.39	.39	.38	.37	.36	.36	.35	.35
Rochester, N. Y.	323	.67	.65	.64	.63	.61	.60	.59	.58	.57	.56	.55	.54	.53
Roseburg, Oreg.	523	.....	.....	.....	.63	.61	.60	.59	.58	.57	.56	.55	.54	.53
Sacramento, Cal.	71	.....	.....	.....	.08	.08	.08	.08	.08	.08	.08	.08	.07	.07
St. Louis, Mo.	571	.....	.72	.70	.69	.67	.66	.64	.63	.62	.61	.60	.59	.58
St. Paul, Minn.	850	1.08	1.06	1.04	1.02	1.00	.98	.96	.94	.92	.90	.89	.87	.86
St. Vincent, Minn.	804	1.02	1.00	.98	.96	.94	.92	.90	.88	.86	.85	.84	.83	.82
Salt Lake City, Utah.	4,345	.....	.....	.....	4.81	4.72	4.64	4.56	4.48	4.41	4.34	4.27	4.20	4.14
San Antonio, Tex.	679	.....	.....	.....	.82	.80	.78	.77	.75	.74	.72	.71	.70	.69
San Diego, Cal.	93	.....	.....	.....	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
Sandusky, Ohio.	629	.81	.79	.77	.76	.74	.73	.71	.70	.68	.67	.66	.65	.64
San Francisco, Cal.	153	.....	.....	.....	.18	.18	.18	.17	.17	.17	.16	.16	.16	.15
San Luis Obispo, Cal.	234	.....	.....	.....	.28	.27	.27	.26	.26	.25	.25	.24	.24	.23
Santa Fe, N. Mex.	6,998	.....	.....	.....	7.21	7.10	6.99	6.88	6.77	6.67	6.57	6.48	6.40	6.31
Sault Ste. Marie, Mich.	642	.82	.80	.78	.77	.75	.74	.72	.71	.70	.68	.67	.66	.65
Savannah, Ga.	98	.....	.....	.....	.....	.12	.12	.11	.11	.11	.11	.11	.10	.10
Shreveport, La.	249	.....	.....	.....	.30	.30	.29	.28	.28	.27	.27	.26	.26	.25
Sioux City, Iowa.	1,165	1.47	1.44	1.41	1.38	1.35	1.32	1.30	1.27	1.25	1.23	1.20	1.18	1.16
Seattle, Wash.	119	.....	.15	.15	.15	.14	.14	.14	.13	.13	.13	.13	.12	.12
Spokane, Wash.	1,930	2.39	2.34	2.30	2.25	2.21	2.16	2.12	2.08	2.05	2.01	1.98	1.94	1.91
Springfield, Ill.	644	.82	.80	.78	.77	.75	.74	.72	.71	.70	.68	.67	.66	.65
Springfield, Mo.	1,336	1.69	1.65	1.62	1.58	1.55	1.52	1.49	1.46	1.44	1.41	1.39	1.36	1.33
Tampa, Fla.	36	.....	.....	.....	.....	.....	.....	.04	.04	.04	.04	.04	.04	.04	.04
Tatoosh Isl'd, Wash.	86	.....	.....	.....	.11	.11	.11	.10	.10	.10	.10	.10	.09	.09
Titusville, Fla.	44	.....	.....	.....	.....	.....	.....	.04	.04	.04	.04	.04	.04	.04	.04
Toledo, Ohio.	674	.86	.84	.82	.80	.79	.77	.76	.74	.73	.71	.70	.69	.68
Tucson, Ariz.	2,390	.....	.....	.....	2.76	2.71	2.66	2.61	2.56	2.51	2.47	2.43	2.39	2.35
Valentine, Nebr.	2,613	3.18	3.12	3.06	3.00	2.94	2.89	2.83	2.78	2.73	2.69	2.64	2.60	2.55
Vicksburg, Miss.	254	.....	.....	.....	.30	.30	.29	.28	.28	.27	.27	.26	.26	.25
Walla Walla, Wash.	1,018	.....	.....	1.26	1.23	1.20	1.17	1.14	1.12	1.10	1.08	1.06	1.03	1.01
Washington, D. C.	112	.....	.....	.....	.13	.13	.13	.13	.12	.12	.12	.12	.11	.11
Wichita, Kans.	1,366	.....	1.69	1.65	1.62	1.58	1.55	1.52	1.50	1.47	1.44	1.41	1.39	1.36
Williston, N. Dak.	1,875	2.32	2.28	2.23	2.18	2.14	2.10	2.06	2.02	1.99	1.95	1.92	1.88	1.85
Wilmington, N. C.	78	.....	.....	.....	.10	.10	.09	.09	.09	.09	.09	.08	.08	.08
Winnemucca, Nev.	4,340	.....	.....	4.84	4.76	4.68	4.60	4.52	4.44	4.37	4.30	4.24	4.18	4.12
Woods Holl, Mass.	22	.....	.....	.....	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
Yuma, Ariz.	141	.....	.....	.....	.....	.....	.16	.15	.15	.15	.15	.14	.14	.14

The accompanying table gives the reduction to sea level at all the stations of the Weather Bureau, and the following explanation of the table is added. The formula which lies at the basis of all theoretical reductions of barometer readings to sea level is that of Laplace. It has been found, however, that in the case of individual observations there are serious errors introduced in the application of the formula, and these are due in part to the fact that the temperature argument—that is, the mean of the temperatures observed at the base and

summit of an isolated peak—is not the true temperature of the air column. In order to determine an exact reduction for an individual station it is only necessary to arrange each difference in pressure between the summit and base according to the mean temperature between base and summit at the same time. In this way a table has been formed for the reduction of observations at Mount Washington. (See Professional Paper No. VI, p. 8.) The error of the theoretical reductions at 0°, at 22.5 inches, is —0.36 inch, and at 22.0 inches it is —0.23 inch.

If all the high stations in the country were situated like Mount Washington, with a station at sea level, or near the base, it would be an easy matter to determine a table of reduction for each station. In the western portion of the country, however, the high stations are on an elevated plateau, and the above plan must be modified. We may say, in general, that any system which will enable us to draw isobars connecting the reduced values at elevated stations with those quite near sea level and west of the plateau region, may be considered fairly satisfactory as a first approximation. In the practical working out of this principle the plan adopted at Mount Washington was carried out. An approximate law of reduction on the east and west sides of the plateau region was found, and when those were seen to be nearly the same they were united in a single formula which enabled the construction of the table here given. After applying this table to make actual reductions it was found that a few stations, owing to their greater or less isolation or to individual peculiarities, did not have perfectly satisfactory reductions. In those cases it was necessary to modify the temperature argument slightly to bring them in harmony with the rest. These stations at the present time are Baker City, Cheyenne, Denver, El Paso, Santa Fe, and Winnemucca.

It was found that in using the observed temperature for the reduction too much weight was given to existing conditions, as the atmosphere did not seem to respond immediately to temperature changes. By taking a mean of the observed temperature and that at the previous observation a fairly satisfactory result could be had, and this is the adopted method. It has been found that at times there are abnormal conditions of both temperature and pressure which throw out the reduction at a limited number of stations, but even in those cases the general reduction is satisfactory. Such conditions are more prevalent in Wyoming, Idaho, Montana, and in Canada to the north of the latter State.

THE TOTAL QUANTITY OF AQUEOUS VAPOR IN THE ATMOSPHERE.

By Prof. C. ABBE.

The diminution of aqueous vapor in the atmosphere with altitude above sea level was approximately determined by Hann in 1874 (see the collection of translations entitled "Short Memoirs on Meteorological Subjects," Annual Report, Smithsonian Institution, 1877, p. 376). Hann showed that all observations on mountains or in balloons, then available to him, agree in giving a simple law of diminution of vapor tension that is empirical, but not contrary to what we know of the laws of the diffusion of vapor. This law is

$$\frac{p}{p_0}=10^{\frac{-h}{6517}}$$

where p and p_0 are the vapor tensions at top and bottom of an air column whose height in meters is h. The constant 6517 may vary with the temperature of the column, but observations were not available for determining this fact; Hann subsequently used 6500 as the constant instead of 6517, and this formula agrees within 1 per cent with the general average of all available European observations.

The total quantity of water present as vapor in a unit volume of air at any height in the atmosphere is given by introducing the above equation into the ordinary expression for the weight in kilograms of the vapor in a cubic meter of air, which therefore becomes

$$q=\frac{0.0010582}{1+at}p_0\ 10^{\frac{-h}{6517}}$$

where a is the coefficient of expansion, and t the temperature of the air in centigrade degrees.

This value for q may be introduced into the differential equation for the quantity of vapor in a column of air reaching from sea level up to the altitude h; the average temperature of the whole column t' is assumed to be the average of the temperatures t_0 at the bottom and t_h at the top of the column. The weight of vapor in kilograms in the whole column of 1 square meter section is expressed by—

$$Q=\frac{0.0010582}{1+at'}p_0 2830\left(1-10^{\frac{-h}{6517}}\right)$$

Tables in English measures based on the above formulæ were prepared in 1884 for an unpublished fourth edition of the Signal Office circular "How to Use Weather Maps," and were also given in a condensed form on pages 409 and 410 of the Smithsonian Report for 1888; in response to several inquiries they are now reproduced herewith (see Table 1 for q and Table 2 for Q).

TABLE 1.—*Normal distribution of aqueous vapor for various altitudes above the earth's surface.*

Altitude in feet above sea level.	Relative tensions or weights by Hann's formula.	Actual weight in grains per cubic foot at any elevation for a given dew-point at the surface.			
		80°.	70°.	60°.	50°.
		Grains.	*Grains.*	*Grains.*	*Grains.*
0	1.000	10.95	7.99	5.76	4.09
2,000	0.806	8.83	6.44	4.64	3.30
4,000	0.650	7.11	5.19	3.74	2.66
6,000	0.524	5.75	4.19	3.02	2.14
8,000	0.423	4.63	3.38	2.44	1.73
10,000	0.341	3.73	2.72	1.96	1.39
12,000	0.275	3.01	2.20	1.58	1.12
14,000	0.221	2.42	1.77	1.27	0.90
16,000	0.179	1.96	1.43	1.03	0.73
18,000	0.144	1.58	1.15	0.83	0.59
20,000	0.116	1.27	0.93	0.67	0.47
22,000	0.094	1.03	0.75	0.54	0.38
24,000	0.075	0.82	0.62	0.43	0.31
26,000	0.061	0.67	0.49	0.35	0.25
28,000	0.049	0.54	0.39	0.28	0.20
30,000	0.040	0.43	0.32	0.23	0.16

The total quantity of vapor in the atmosphere may also be expressed by the depth it would occupy if all precipitated as rain, as in the following paragraphs (for precision the equivalent water is supposed to have the temperature of 39.2°, which is that of the standard maximum density of water):

For a vertical column of 1 square meter section, Q expressed in kilograms is equivalent to Q millimeters of rainfall at 39.2° for that same horizontal square meter.

For a vertical column of one square foot section, Q expressed in grains is equivalent to $\frac{Q}{36415.54}$ inches of rainfall at 39.2° for that same square foot.

This latter figure is based on the fact that 1 cubic foot of pure water at its maximum density, viz, for 39.2°, weighs *in vacuo* 62.42667 pounds avoirdupois of 7,000 grains each; at the temperature 62.5° the density of the water is less and the weight of a cubic foot is 62.355 pounds.

The total amount of moisture in a column of saturated air extending from sea level up to a given altitude is given in the following table by the depth in inches of the corresponding layer of water that would be formed if all the moisture were to fall to the earth as rain.

TABLE 2.—*Depth of layer of water in a column of air whose dew-point at the earth's surface is given.*

Height of column in feet.	80°.	70°.	60°.	50°.
	Inch.	*Inch.*	*Inch.*	*Inch.*
6,000	1.3	1.0	0.7	0.5
12,000	2.1	1.5	1.1	0.8
18,000	2.5	1.8	1.3	0.9
24,000	2.7	2.0	1.4	1.0
30,000	2.8	2.1	1.5	1.1

In order to use the preceding tables we need to know the current or the average dew-point at any given station. The normal values for a few stations were given in the publication above referred to, but the present Summary gives the average dew-point at 8 a. m. and 8 p. m. for the year 1894 at most of the Weather Bureau stations, and from these values the aqueous contents of the atmosphere can be computed, with the results, as shown in the following table.

TABLE 3.—*Total quantity of water contained in 30,000 feet of the lower atmosphere, expressed as depth of equivalent rainfall and corresponding to the mean local dew-point observed in* 1894.

No.	Station.	Inch.	No.	Station.	Inch.
	New England.			*South Atlantic States.*	
1	Eastport, Me	0.6	19	Charlotte, N. C.	1.0
2	Portland, Me	0.7	20	Hatteras, N. C	1.4
3	Northfield, Vt	0.6	21	Kittyhawk, N. C.	1.3
4	Boston, Mass	0.8	22	Raleigh, N. C.	1.1
5	Nantucket, Mass.	0.9	23	Wilmington, N. C.	1.3
6	Woods Holl, Mass	.....	24	Charleston, S. C	1.4
7	Block Island, R. I.	0.9	25	Augusta, Ga	1.3
8	New Haven, Conn.	0.9	26	Savannah, Ga.	1.4
9	New London, Conn	0.9	27	Jacksonville, Fla	1.5
	Middle Atlantic States.			*Florida Peninsula.*	
10	Albany, N. Y.	0.8	28	Jupiter, Fla	1.9
11	New York, N. Y.	0.9	29	Key West, Fla.	1.9
12	Harrisburg, Pa.	0.9	30	Tampa, Fla	1.7
13	Philadelphia, Pa.	0.9	31	Titusville, Fla.	1.7
14	Atlantic City, N. J.	1.0		*Eastern Gulf States.*	
15	Baltimore, Md.	0.9	32	Atlanta, Ga	1.1
16	Washington, D. C.	1.0	33	Pensacola, Fla	1.5
17	Lynchburg, Va.	1.0	34	Mobile, Ala	1.5
18	Norfolk, Va.	1.2	35	Montgomery, Ala.	1.3

TABLE 3.—*Total quantity of water, etc.*—Continued.

No.	Station.	Inch.	No.	Station.	Inch.
	Eastern Gulf States—Cont'd.			*Missouri Valley.*	
36	Meridian, Miss	1.3	87	Columbia, Mo	.....
37	Vicksburg, Miss.	1.2	88	Kansas City, Mo.	0.8
38	New Orleans, La.	1.5	89	Springfield, Mo	0.9
	Western Gulf States.		90	Omaha, Nebr.	0.7
39	Shreveport, La.	1.3	91	Valentine, Nebr.	0.5
40	Fort Smith, Ark.	1.1	92	Sioux City, Iowa.	0.6
41	Little Rock, Ark	1.1	93	Pierre, S. Dak.	0.5
42	Corpus Christi, Tex	1.3	94	Huron, S. Dak	0.5
43	Galveston, Tex	1.6		*Northern Slope.*	
44	Palestine, Tex.	1.3	95	Havre, Mont	0.5
45	San Antonio, Tex.	1.2	96	Miles City, Mont	0.5
	Ohio Valley and Tennessee.		97	Helena, Mont.	0.4
46	Chattanooga, Tenn.	1.0	98	Rapid City, S. Dak	0.5
47	Knoxville, Tenn	1.0	99	Cheyenne, Wyo.	0.4
48	Memphis, Tenn.	1.1	100	Lander, Wyo	0.4
49	Nashville, Tenn	1.0	101	North Platte, Nebr	0.5
50	Lexington, Ky.	0.9		*Middle Slope.*	
51	Louisville, Ky.	0.9	102	Denver, Colo.	0.4
52	Indianapolis, Ind.	0.8	103	Pueblo, Colo.	0.4
53	Cincinnati, Ohio	0.9	104	Concordia, Kans	0.7
54	Columbus, Ohio	0.8	105	Dodge City, Kans.	0.6
55	Pittsburg, Pa	0.9	106	Wichita, Kans	0.8
56	Parkersburg, W. Va	0.9	107	Oklahoma, Okla	0.9
	Lower Lake Region.			*Southern Slope.*	
57	Buffalo, N. Y.	0.8	108	Abilene, Tex.	0.9
58	Oswego N. Y.	0.8	109	Amarillo, Tex	0.5
59	Rochester, N. Y.	0.8		*Southern Plateau.*	
60	Erie, Pa.	0.8	110	El Paso, Tex.	0.4
61	Cleveland, Ohio.	0.8	111	Santa Fe, N. Mex	0.3
62	Sandusky, Ohio.	0.8	112	Tucson, Ariz.	0.5
63	Toledo, Ohio	0.8	113	Yuma, Ariz	0.9
64	Detroit, Mich.	0.8	114	Independence, Cal	.....
	Upper Lake Region.			*Middle Plateau.*	
65	Alpena, Mich	0.7	115	Carson City, Nev.	0.4
66	Grand Haven, Mich.	0.8	116	Winnemucca, Nev	0.3
67	Marquette, Mich.	0.6	117	Salt Lake City, Utah	0.5
68	Port Huron, Mich	0.8		*Northern Plateau.*	
69	Sault Ste. Marie, Mich	0.6	118	Baker City, Oreg.	0.5
70	Chicago, Ill	0.8	119	Idaho Falls, Idaho.	0.4
71	Milwaukee, Wis	0.8	120	Spokane, Wash	0.5
72	Green Bay, Wis.	0.7	121	Walla Walla, Wash.	0.8
73	Duluth, Minn.	0.5		*North Pacific Coast Region.*	
	North Dakota.		122	Fort Canby, Wash	0.9
74	Moorhead, Minn.	0.5	123	Port Angeles, Wash	0.8
75	St. Vincent, Minn.	0.5	124	Seattle, Wash.	0.8
76	Bismarck, N. Dak.	0.4	125	Tatoosh Island, Wash	0.8
77	Williston, N. Dak.	0.4	126	Portland, Oreg.	0.9
	Upper Mississippi Valley.		127	Roseburg, Oreg	0.9
78	St. Paul, Minn.	0.5		*Middle Pacific Coast Region.*	
79	La Crosse, Wis	0.7	128	Eureka, Cal.	0.9
80	Davenport, Iowa	0.8	129	Red Bluff, Cal.	0.9
81	Des Moines, Iowa.	0.7	130	Sacramento, Cal.	0.9
82	Keokuk, Iowa.	0.8	131	San Francisco, Cal	0.9
83	Cairo, Ill.	1.0		*South Pacific Coast Region.*	
84	Springfield, Ill.	0.8	132	Fresno, Cal	0.9
85	Hannibal, Mo	0.8	133	Los Angeles, Cal.	1.0
86	St. Louis, Mo	0.9	134	San Diego, Cal.	1.1
			135	San Luis Obispo, Cal.	.....

The above figures refer to the ideal atmospheres above sea level, and must be diminished by the quantity that is supposed to lie between the station and sea level.

If this moisture were everywhere and entirely precipitated the weight of the atmosphere would be diminished, and the barometric readings would be lower than now by $\frac{1}{13.6}$ of the above figures, i. e., by the equivalent in mercury of the above given inches of water.

TABLE I.—*Annual meteorological summary, Weather Bureau stations*, 1894.

Districts and stations.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.						Humidity and precipitation.					Wind.				Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.
	Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest monthly range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Max. velocity. Miles per hour.	Max. velocity. Direction.				
New England.																						
Eastport, Me	29.92	30.01	+ .05	41.6	+ 0.2	91	48.2	−14	35.1	60	34	76	22.84	−26.14	136	93,205	sw.	78	ne.	71	165	129	6.4
Portland, Me	29.90	30.01	+ .03	45.4	+ 0.8	97	52.9	−15	37.9	63	37	76	37.13	− 5.55	134	66,059	w.	41	e.	98	121	146	5.9
Northfield, Vt	29.09	30.05	+ .03	42.6	+ 1.6	93	53.0	−31	32.3	75	35	78	28.92	− 7.06	147	78,101	s.	51	sw.	103	138	124	5.6
Boston, Mass	29.91	30.05	+ .03	50.3	+ 1.4	97	57.7	− 7	42.8	58	40	71	38.17	− 7.93	123	99,117	w.	51	ne.	108	132	125	5.7
Nantucket, Mass	30.05	30.06	+ .03	49.3	+ 0.7	85	54.4	2	44.1	45	44	81	35.14	− 6.86	129	105,502	n.	60	se.*	125	118	122	5.5
Woods Holl, Mass	.....	.....	.....	49.6	+ 0.1	83	54.9	− 1	44.3	48	.....	.....	43.31	− 1.56	131	132,862	sw.	72	sw.	120	113	132	5.6
Vineyard Haven, Mass	.....	.....	.....	52.4	+ 1.1	91	59.5	3	45.2	51	.....	.....	52.49	+10.97	127	90,603	sw.	....	.....	138	67	160	....
Block Island, R. I	30.03	30.06	+ .03	49.9	+ 0.6	85	55.3	0	44.5	49	44	81	37.46	− 6.90	125	147,034	sw.	84	e.	115	158	92	5.4
Narragansett Pier, R. I	.....	.....	.....	49.2	+ 0.7	91	57.4	− 7	41.1	58	.....	.....	38.66	−10.61	124	.....	sw.	....	.....	192	22	151	....
New Haven, Conn	29.93	30.05	+ .01	50.1	+ 0.7	94	58.2	− 5	41.9	56	43	79	37.74	−12.48	127	76,954	sw.	41	ne.	147	114	104	5.0
New London, Conn	30.03	30.08	+ .05	49.7	+ 0.1	91	56.9	− 2	43.6	49	43	81	39.20	− 9.89	140	67,167	nw.	46	s.	126	128	111	5.4
Middle Atlantic States.																						
Albany, N. Y	29.97	30.06	+ .02	49.6	+ 1.4	97	58.1	−11	41.1	61	41	76	35.11	− 3.68	154	66,277	s.	38	se.	122	117	126	5.6
New York, N. Y	29.87	30.07	+ .02	53.7	+ 1.7	96	61.3	1	46.1	51	43	73	44.17	− 1.30	137	90,177	nw.	48	ne.	117	139	109	5.4
Harrisburg, Pa	29.67	30.09	+ .01	52.9	+ 1.4	96	60.7	3	45.1	56	44	77	40.56	− 3.01	128	60,845	w.	47	nw.	126	119	120	5.2
Philadelphia, Pa	29.95	30.07	+ .01	55.0	+ 1.1	97	62.7	4	47.3	56	44	72	40.34	− 0.34	125	89,436	sw.	43	ne.	129	104	132	5.4
Atlantic City, N. J	30.03	30.08	+ .03	53.0	+ 1.1	90	58.8	5	47.2	58	47	83	33.21	− 9.60	138	103,133	sw.	54	e.	131	91	142	5.6
New Brunswick, N. J	.....	.....	.....	52.7	+ 1.3	100	62.1	− 1	43.2	56	.....	.....	47.31	.....	146	.....	nw.	....	.....	58	186	121	....
Baltimore, Md	29.88	30.07	− .01	55.9	+ 0.6	98	63.6	7	48.2	62	44	68	38.32	− 6.46	134	64,369	nw.	48	w.	166	118	81	4.4
Washington, D. C	29.97	30.09	+ .01	56.4	+ 1.4	98	65.1	6	47.6	63	45	71	30.85	−14.21	122	57,073	s.	47	nw.	179	87	99	4.4
Cape Henry, Va	.....	.....	.....	60.1	+ 1.5	97	67.8	14	52.4	60	.....	.....	46.37	− 6.65	113	109,570	sw.	....	.....	140	97	128	....
Lynchburg, Va	29.37	30.11	+ .01	58.2	+ 0.9	97	68.5	7	48.1	67	47	71	35.84	− 7.11	130	37,532	sw.	35	nw.	124	161	80	5.0
Norfolk, Va	30.03	30.09	.00	60.3	+ 0.9	97	68.2	13	52.3	64	52	80	53.09	+ 0.89	126	74,476	sw.	48	nw.	164	107	94	4.6
South Atlantic States.																						
Charlotte, N. C	29.28	30.10	+ .01	60.9	+ 0.6	96	70.5	2	51.3	67	48	69	42.94	−10.73	121	58,090	sw.	36	s.*	181	106	78	4.3
Hatteras, N. C	30.10	30.11	+ .03	62.9	+ 1.3	86	67.7	17	58.1	56	57	82	57.85	−11.07	122	117,183	sw.	60	sw.	117	153	95	5.2
Kittyhawk, N. C	30.07	30.08	+ .02	60.8	+ 0.6	94	66.7	14	55.0	59	54	80	51.42	− 9.14	123	126,469	sw.*	60	ne.	171	79	115	4.6
Raleigh, N. C	29.69	30.11	+ .01	60.6	+ 1.3	97	69.9	10	51.3	68	50	75	50.24	− 3.05	136	52,563	sw.	32	n.	123	113	129	5.3
Wilmington, N. C	30.03	30.12	+ .03	63.9	+ 0.5	95	71.9	14	55.9	60	56	83	45.18	−11.06	125	73,340	sw.	46	w.	171	81	113	4.4
Charleston, S. C	30.08	30.10	+ .01	66.3	0.0	96	73.2	14	59.4	59	57	79	56.81	+ 0.51	120	71,641	sw.	49	ne.	101	216	48	4.7
Augusta, Ga	29.92	30.12	+ .01	64.2	− 0.6	97	74.0	9	54.3	64	53	74	55.54	+ 7.15	117	43,720	nw.	46	n.	173	99	93	4.3
Savannah, Ga	30.02	30.13	+ .02	67.2	+ 0.3	99	75.9	12	58.4	66	58	80	52.80	+ 1.10	135	70,063	s.	48	ne.	131	162	72	4.6
Jacksonville, Fla	30.07	30.12	+ .03	69.8	+ 0.1	96	78.8	14	60.7	66	59	78	56.84	+ 1.71	129	63,544	ne.	62	se.	100	142	123	5.6
Florida Peninsula.																						
Jupiter, Fla	30.07	30.10	+ .01	73.8	− 0.8	91	79.8	24	67.8	56	67	82	40.42	−17.59	110	83,099	se.	50	ne.	161	143	61	4.6
Key West, Fla	30.08	30.10	+ .04	76.7	− 0.8	91	80.9	44	72.4	37	67	75	42.34	+ 2.33	94	84,420	e.	87	sw.	146	154	65	4.6
Tampa, Fla	30.07	30.11	.....	72.3	.....	93	81.2	19	63.4	61	64	82	66.93	.....	130	53,389	ne.	43	ne.	94	219	52	5.0
Titusville, Fla	30.08	30.12	+ .02	71.3	− 0.5	95	79.1	18	63.5	63	64	81	43.72	− 9.24	115	99,120	e.*	66	ne.	170	172	23	3.7
Eastern Gulf States.																						
Atlanta, Ga	28.94	30.13	+ .02	61.6	+ 0.3	96	70.6	4	52.6	65	50	72	40.92	−13.54	114	82,055	nw.	48	sw.	150	109	106	4.9
Pensacola, Fla	30.03	30.09	+ .01	67.9	− 0.1	101	75.4	14	60.5	61	59	76	53.99	− 8.14	122	81,841	sw.	68	ne.	174	91	100	4.6
Mobile, Ala	30.05	30.11	+ .02	67.2	− 0.1	101	75.7	16	58.8	57	59	82	53.91	− 8.74	147	67,307	n.	48	n.	139	158	68	4.6
Montgomery, Ala	29.84	30.11	+ .01	66.0	+ 0.3	100	76.3	13	55.8	62	54	73	41.35	−11.55	124	52,239	n.	36	sw.	128	149	88	5.0
Meridian, Miss	29.72	30.11	+ .01	63.3	− 0.4	98	74.7	9	51.9	67	54	78	51.79	.....	111	47,448	ne.	43	s.	142	121	102	4.8
Vicksburg, Miss	29.81	30.07	− .02	65.6	− 0.3	100	74.9	15	56.2	61	53	72	53.93	− 3.21	124	58,170	se.	47	nw.	205	103	57	3.6
New Orleans, La	30.04	30.10	+ .03	69.1	− 0.1	99	76.7	21	61.6	60	59	76	54.44	− 7.34	127	67,384	se.	48	nw.	189	110	66	3.9
Western Gulf States.																						
Shreveport, La	29.80	30.06	− .01	65.6	− 0.6	101	75.3	11	55.9	66	54	72	39.80	−11.00	104	57,573	se.	54	nw.	164	96	105	4.6
Fort Smith, Ark	29.56	30.08	+ .03	60.8	0.0	105	72.3	− 7	49.4	84	49	68	41.21	− 4.00	92	59,413	e.	48	e.	176	97	92	4.3
Little Rock, Ark	29.76	30.08	+ .02	61.8	− 0.4	103	71.2	1	52.5	71	50	71	48.83	− 5.38	96	60,549	s.	51	ne.	161	95	109	4.9
Corpus Christi, Tex	30.03	30.05	+ .01	70.7	+ 0.7	98	76.3	24	65.3	56	65	85	28.11	− 1.75	76	106,712	se.	48	nw.	79	159	127	5.8
Galveston, Tex	30.05	30.09	+ .03	70.0	0.0	97	74.6	21	65.5	56	62	79	40.64	−10.34	102	94,461	se.	50	nw.	203	93	69	3.7
Palestine, Tex	29.54	30.08	.00	66.6	+ 1.0	103	77.1	4	56.2	75	55	74	46.05	− 0.31	114	53,874	sw.	38	s.	121	170	74	5.0
San Antonio, Tex	29.37	30.08	+ .04	70.1	+ 1.5	106	80.9	16	59.4	65	52	56	21.75	−10.38	65	60,922	se.	45	w.	142	147	76	4.4
Ohio Valley and Tennessee.																						
Chattanooga, Tenn	29.32	30.13	+ .02	61.0	+ 0.4	98	70.8	5	51.4	64	48	69	37.22	−19.60	137	58,285	s.	44	w.	98	170	97	5.4
Knoxville, Tenn	29.07	30.11	− .01	59.1	+ 0.9	96	68.9	2	49.2	64	47	70	37.44	−15.43	108	42,004	sw.	41	sw.	150	108	107	4.8
Memphis, Tenn	29.75	30.11	+ .03	62.1	+ 0.5	99	71.4	2	52.9	70	50	72	54.52	+ 0.54	107	62,139	nw.	40	se.	198	84	83	3.7
Nashville, Tenn	29.52	30.11	+ .03	59.7	+ 0.3	103	69.2	− 2	50.1	70	48	70	41.96	− 9.01	114	50,801	nw.	37	sw.	140	122	103	5.0
Lexington, Ky	29.01	30.07	.....	55.9	+ 0.9	97	65.2	− 6	46.6	71	43	67	36.32	−10.83	132	102,057	sw.	62	sw.	102	131	132	5.8
Louisville, Ky	29.51	30.08	+ .01	58.0	+ 0.9	99	67.6	− 5	48.5	74	44	64	38.08	− 9.11	121	69,656	s.	48	sw.	131	123	111	5.4
Indianapolis, Ind	29.24	30.07	.00	54.5	+ 1.8	99	63.8	− 7	45.1	68	42	68	31.13	−13.69	127	57,556	nw.	36	sw.*	108	133	124	5.6
Cincinnati, Ohio	29.40	30.07	+ .01	56.1	+ 0.7	96	64.6	− 4	47.6	66	43	66	26.59	−14.59	124	64,659	se.	37	sw.	155	117	93	4.8
Columbus, Ohio	29.20	30.08	.00	53.3	+ 1.0	97	62.4	− 4	44.3	63	42	70	29.49	−10.79	132	76,463	sw.	52	w.	120	134	111	5.3
Pittsburg, Pa	29.19	30.08	+ .02	54.5	+ 1.5	97	63.9	− 4	45.1	66	44	72	28.17	−10.07	142	56,621	nw.	33	nw.	121	137	107	5.3
Parkersburg, W. Va	29.41	30.10	.00	54.9	+ 1.0	96	65.0	− 4	44.7	70	45	73	37.18	− 7.82	154	47,072	se.	46	w.	123	142	100	5.2
Lower Lake Region.																						
Buffalo, N. Y	29.29	30.04	+ .01	48.6	+ 2.2	89	55.1	− 5	42.2	56	40	74	38.92	+ 0.61	156	100,675	sw.	59	sw.	73	182	110	6.0
Oswego, N. Y	29.66	30.03	+ .01	47.3	+ 0.8	94	54.0	−11	40.6	56	39	74	36.44	+ 1.16	169	98,397	se.*	48	ne.	91	108	166	6.1
Rochester, N. Y	29.49	30.00	+ .03	49.5	+ 2.2	99	57.8	− 8	41.3	63	40	74	35.11	− 0.07	173	71,294	sw.	44	sw.	118	107	140	5.6
Erie, Pa	29.27	30.04	+ .01	50.6	+ 1.7	92	58.1	− 2	43.0	58	40	72	35.16	− 7.24	162	98,577	s.	60	se.	93	147	125	5.7
Cleveland, Ohio	29.25	30.05	.00	50.8	+ 1.9	92	58.1	0	43.5	60	40	71	27.73	− 9.51	141	113,040	se.	62	w.	125	111	129	5.6
Sandusky, Ohio	29.37	30.03	− .01	51.6	+ 1.2	94	59.0	− 1	44.2	62	41	71	28.09	− 7.31	120	75,448	sw.	42	n.	58	167	140	6.4
Toledo, Ohio	29.32	30.05	.00	51.1	+ 1.5	96	59.3	− 3	43.0	64	40	72	21.34	−10.54	136	89,498	sw.	60	ne.	118	109	138	5.5
Detroit, Mich	29.25	30.03	.00	49.8	+ 1.5	96	57.5	−11	42.0	65	39	72	25.74	− 6.86	118	96,139	sw.	57	sw.	135	118	112	5.2
Upper Lake Region.																						
Alpena, Mich	29.33	30.01	.00	43.9	+ 2.6	98	51.2	−14	36.6	69	38	81	30.88	− 5.55	160	86,024	nw.	47	e.	87	139	139	6.1
Grand Haven, Mich	29.32	30.00	− .02	47.9	+ 1.6	92	55.2	− 5	40.6	60	40	77	32.61	− 4.12	138	94,492	sw.	42	w.	99	114	152	6.0
Marquette, Mich	29.17	29.98	− .02	42.4	+ 1.8	100	49.6	−17	35.3	65	35	78	35.58	+ 2.82	178	92,902	nw.	48	sw.	77	110	178	6.6
Port Huron, Mich	29.33	30.03	.00	47.9	+ 2.8	96	55.8	−10	39.9	62	39	74	26.92	− 5.24	133	102,406	sw.	54	w.*	139	109	107	5.0
Sault Ste. Marie, Mich	29.27	29.98	− .02	40.5	+ 1.4	94	48.8	−26	32.1	67	35	84	38.53	+ 3.58	183	74,781	se.	50	nw.	37	104	224	7.5
Chicago, Ill	29.14	30.03	.00	49.6	+ 0.9	96	56.5	− 9	42.7	69	39	71	27.46	− 8.09	107	150,618	sw.	84	ne.	144	121	100	4.9
Milwaukee, Wis	29.28	30.01	− .02	47.6	+ 2.4	97	55.1	−14	40.2	68	39	74	27.79	− 4.70	109	91,834	sw.	50	w.	93	157	115	5.6
Green Bay, Wis	29.34	30.02	− .02	46.2	+ 3.4	97	54.8	−16	37.6	61	36	70	35.89	+ 2.89	118	79,155	s.*	48	n.	64	146	155	6.6
Duluth, Minn	29.24	29.97	− .04	41.5	+ 2.3	94	49.0	−24	34.0	75	32	77	31.70	− 0.37	129	58,572	ne.	38	nw.	128	111	126	5.3
North Dakota.																						
Moorhead, Minn	28.94	29.98	− .04	40.8	+ 3.2	102	51.1	−34	30.6	72	32	75	22.43	− 1.94	91	99,443	s.	60	nw.	125	153	87	5.1
St. Vincent, Minn	29.09	29.97	− .05	37.7	+ 3.5	100	49.7	−38	25.7	84	30	83	20.29	+ 2.12	100	83,213	n.	50	n.	146	99	120	5.0
Bismarck, N. Dak	28.16	29.99	− .01	42.2	+ 2.9	101	53.4	−33	31.0	82	29	66	14.32	− 4.64	69	93,301	nw.	59	nw.	219	78	68	3.9
Williston, N. Dak	27.94	29.96	− .04	40.4	+ 1.1	100	51.8	−36	29.0	83	25	59	17.76	+ 3.50	87	88,227	se.	54	nw.*	120	118	127	5.5
Upper Mississippi Valley.																						
St. Paul, Minn	29.07	30.00	− .03	46.1	+ 2.5	100	55.5	−25	36.8	78	34	67	25.80	− 1.51	103	70,290	se.	40	nw.	141	99	125	5.2
La Crosse, Wis	29.23	30.01	− .02	48.4	+ 2.5	101	58.0	−19	38.8	75	36	68	22.94	− 9.10	103	68,188	s.	42	s.	141	144	80	4.9
Davenport, Iowa	29.36	30.02	− .02	51.5	+ 2.2	100	60.5	−21	42.4	83	39	68	18.52	−16.35	83	81,604	sw.	60	sw.	121	135	109	5.2
Des Moines, Iowa	29.09	30.03	− .02	51.2	+ 2.2	104	61.6	−27	40.9	82	37	65	20.06	−15.00	96	73,435	sw.	42	sw.	196	104	65	4.1
Keokuk, Iowa	29.38	30.04	.00	53.7	+ 1.6	102	63.3	−16	44.6	85	41	67	27.20	− 8.82	93	70,459	sw.	48	w.	187	101	77	3.9
Cairo, Ill	29.69	30.08	.00	58.6	+ 0.7	100	67.2	− 4	49.9	72	48	72	30.51	−13.19	106	74,165	s.	48	sw.	164	112	89	4.4

TABLE I.—*Annual meteorological summary, Weather Bureau stations*, 1894—Continued.

Districts and stations.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.							Humidity and precipitation.					Wind.				Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.
	Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest monthly range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Max. velocity. Miles per hour.	Max. velocity. Direction.				
Up. Mississippi Val.—Con.																							
Springfield, Ill	29.36	30.06	.00	53.4	+ 0.6	98	62.9	−17	43.9	83	41	68	28.34	−10.75	101	83,476	s.	40	sw.	125	117	123	5.2
Hannibal, Mo	29.47	30.05	.....	54.2	.....	100	64.1	−14	44.2	85	41	67	22.59	.....	93	82,725	w.	48	s.*	150	118	97	4.9
St. Louis, Mo	29.45	30.06	.00	57.6	+ 1.5	100	66.3	−11	48.9	83	44	65	27.44	−10.56	98	97,820	s.	58	sw.	200	76	89	3.8
Missouri Valley.																							
Columbia, Mo	.....	.....	.....	56.1	.....	105	68.7	−16	43.5	90	.....	.....	28.88	.....	104	62,632	se.	34	sw.	152	106	107	4.7
Kansas City, Mo	29.03	30.06	.00	55.4	+ 1.5	100	65.0	−15	45.9	82	42	67	35.40	− 1.16	89	79,811	s.	36	sw.	170	129	66	4.0
Springfield, Mo	28.65	30.07	+ .03	56.2	+ 0.2	97	65.8	−17	46.6	87	43	67	40.41	− 6.10	92	87,624	se.	48	sw.	144	140	81	4.2
Omaha, Nebr	28.84	30.04	− .02	52.1	+ 2.3	106	62.3	−22	41.9	83	37	63	17.82	−15.22	81	72,829	se.	38	sw.	159	106	100	4.6
Valentine, Nebr	27.26	30.00	− .04	48.5	+ 2.1	103	61.7	−38	35.2	91	32	61	10.14	− 8.79	72	101,515	nw.	52	nw.	126	182	57	5.0
Sioux City, Iowa	28.76	30.01	− .01	49.4	+ 2.0	107	60.5	−26	38.3	82	35	65	17.84	.....	85	102,069	s.	75	s.	157	127	81	4.4
Pierre, S. Dak	28.40	29.98	− .04	48.1	+ 3.1	108	60.1	−28	36.1	82	32	63	7.82	− 7.65	66	87,627	se.	60	nw.	155	142	68	4.3
Huron, S. Dak	28.57	29.99	− .05	45.3	+ 2.7	108	58.8	−35	31.8	85	31	68	13.56	− 8.18	85	125,104	se.	69	se.	147	127	91	4.7
Northern Slope.																							
Havre, Mont	27.30	29.93	− .07	42.8	+ 1.7	99	55.0	−26	30.6	80	28	63	14.49	− 0.46	91	83,799	sw.	53	nw.	124	168	73	5.0
Helena, Mont	25.81	30.04	+ .01	44.2	+ 0.9	95	53.7	−26	34.9	78	26	56	11.17	− 2.05	114	68,563	sw.	52	w.	141	108	116	5.0
Miles City, Mont	27.44	29.96	.....	45.0	+ 0.8	103	57.0	−30	32.9	76	29	93	15.86	.....	93	54,377	nw.	40	n.	149	128	88	4.5
Rapid City, S. Dak	26.59	29.97	− .04	47.7	+ 1.6	100	59.9	−26	35.5	88	29	55	13.75	− 3.30	97	86,112	w.	56	sw.	121	169	75	5.0
Cheyenne, Wyo	24.00	30.00	− .02	45.6	+ 0.7	94	57.9	−17	33.2	76	27	54	12.98	+ 0.85	74	107,214	nw.	72	w.	130	191	44	4.4
Lander, Wyo	24.62	30.04	.00	42.5	− 0.1	94	57.8	−28	27.0	86	23	55	11.10	− 0.68	63	43,366	sw.	60	sw.	134	187	44	4.5
North Platte, Nebr	27.08	30.04	− .01	50.0	+ 1.5	103	63.9	−26	36.0	81	33	61	11.21	− 7.85	60	89,380	nw.	46	nw.	128	211	26	4.2
Middle Slope.																							
Denver, Colo	24.75	30.02	.00	50.6	− 0.9	96	63.7	− 8	37.5	77	25	43	15.09	+ 0.42	75	68,215	s.	60	ne.	160	139	46	4.2
Pueblo, Colo	25.26	30.01	− .03	51.7	− 0.3	97	66.7	−17	36.6	82	23	43	12.64	+ 1.94	60	70,368	nw.	52	n.	165	160	40	4.0
Concordia, Kans	28.54	30.04	− .02	54.2	+ 2.2	104	66.7	−17	41.8	89	37	64	27.27	+ 1.50	67	70,840	s.	48	s.	228	90	47	3.1
Dodge City, Kans	27.40	30.02	− .01	54.9	+ 1.3	106	68.1	−15	41.6	90	35	57	12.60	− 8.34	56	105,121	se.	48	nw.	222	107	36	3.5
Wichita, Kans	28.59	30.05	+ .01	57.0	+ 1.4	104	68.5	−12	45.5	84	40	62	32.44	+ 4.16	65	80,985	s.	43	n.	214	79	72	3.6
Oklahoma, Okla	28.75	30.06	.....	59.9	.....	104	71.0	− 8	48.7	84	45	66	26.72	.....	66	83,476	s.	45	n.	254	65	46	3.0
Southern Slope.																							
Abilene, Tex	28.24	30.06	+ .02	64.2	+ 0.5	104	74.7	4	53.7	74	46	60	24.39	+ 0.11	65	88,956	s.	48	nw.	161	139	65	3.9
Amarillo, Tex	26.28	30.03	.....	55.7	.....	99	66.4	− 2	45.1	75	34	54	15.81	.....	69	150,335	s.	66	sw.	158	121	86	4.5
Southern Plateau.																							
El Paso, Tex	26.20	30.01	.00	63.4	− 0.6	102	76.6	14	50.2	60	25	33	4.24	− 6.29	31	86,103	nw.	54	nw.	194	130	41	3.2
Santa Fe, N. Mex	23.30	30.04	+ .04	48.9	− 0.4	86	59.4	0	38.4	52	20	41	13.31	− 0.38	79	60,697	sw.	42	sw.	213	114	38	3.5
Tucson, Ariz	27.50	29.94	.....	66.1	− 1.4	106	81.4	18	50.8	62	34	40	7.29	− 5.94	56	54,034	nw.	60	sw.	228	92	45	3.3
Yuma, Ariz	29.77	29.91	.00	71.4	− 1.0	113	86.0	28	56.8	62	43	44	2.95	− 0.19	13	58,760	w.	54	nw.	260	85	20	2.2
Middle Plateau.																							
Carson City, Nev	25.31	30.06	.....	49.1	− 0.5	90	62.3	− 7	36.0	67	25	44	13.35	+ 0.62	72	.....	sw.	....	.....	272	35	58	2.9
Winnemucca, Nev	25.67	30.05	+ .02	47.7	− 0.9	96	60.8	−11	34.7	65	22	45	10.12	+ 1.20	96	89,024	sw.	74	sw.	130	106	129	5.2
Salt Lake City, Utah	25.68	30.09	+ .04	50.8	− 0.8	96	60.9	− 1	40.8	52	31	52	15.27	− 1.10	91	53,505	se.	46	s.*	149	133	83	4.6
Northern Plateau.																							
Baker City, Oreg	26.46	30.01	.....	45.3	− 0.5	91	55.6	− 7	35.0	58	31	62	17.83	.....	112	47,009	se.	36	se.*	116	106	143	5.4
Idaho Falls, Idaho	25.24	30.07	.....	42.9	+ 1.2	96	55.6	−28	30.2	63	27	63	14.62	.....	117	76,766	s.	44	se.	86	122	157	6.2
Spokane, Wash	27.97	30.02	.00	48.2	+ 0.4	98	57.5	− 2	39.0	60	32	64	17.84	− 0.27	137	57,126	sw.	39	sw.	62	118	185	6.6
Walla Walla, Wash	28.95	30.04	.00	53.0	− 0.9	108	62.5	6	43.6	60	39	65	20.49	+ 3.91	143	56,104	s.	38	se.	117	150	98	5.3
North Pacific Coast Region.																							
Fort Canby, Wash	29.82	30.02	.00	49.2	− 1.6	89	53.5	25	44.9	38	44	85	70.11	+11.45	216	122,235	nw.	91	s.	94	75	196	6.6
Port Angeles, Wash	29.97	30.00	.00	46.7	+ 0.2	86	52.7	20	40.7	49	41	81	30.42	− 1.40	168	46,818	s.	48	ne.	97	133	135	5.7
Seattle, Wash	29.88	30.01	.....	50.4	.....	88	56.9	21	43.9	47	42	78	41.08	.....	187	54,690	se.	37	s.	77	152	136	6.1
Tatoosh Island, Wash	29.91	30.01	.....	47.4	− 1.5	80	51.0	26	43.7	33	43	86	114.34	+27.59	230	128,094	e.	76	e.	63	73	229	7.4
Portland, Oreg	29.88	30.06	.00	51.9	− 1.2	94	59.4	18	44.4	57	43	76	39.32	− 9.91	176	80,714	nw.	54	sw.	100	100	165	6.0
Roseburg, Oreg	29.47	30.04	− .04	52.6	+ 0.4	104	61.8	20	43.3	57	43	76	44.29	+ 9.01	152	29,074	nw.	36	sw.	108	102	155	5.9
Middle Pacific Coast Region.																							
Eureka, Cal	30.02	30.08	+ .02	50.7	− 0.7	79	56.2	28	45.1	32	47	91	51.28	+ 6.92	130	56,520	nw.	46	nw.	86	133	142	5.9
Red Bluff, Cal	29.66	30.02	+ .02	62.1	− 0.3	110	73.2	27	50.9	55	43	59	26.98	+ 1.07	90	62,285	nw.	46	se.	208	91	66	3.5
Sacramento, Cal	29.94	30.03	+ .03	62.3	0.0	108	71.4	26	49.2	58	46	66	22.61	+ 0.75	64	75,301	sw.	60	se.	212	79	74	3.4
San Francisco, Cal	29.89	30.05	+ .00	55.1	− 1.5	94	61.0	36	49.1	45	47	80	24.32	+ 0.18	77	96,367	sw.	40	s.*	173	104	88	4.3
South Pacific Coast Region.																							
Fresno, Cal	29.64	30.00	+ .02	62.6	− 0.9	109	75.6	25	49.6	55	43	57	12.48	+ 3.06	55	53,470	nw.	34	nw.	213	88	64	3.5
Los Angeles, Cal	29.66	30.01	+ .01	59.4	+ 0.1	99	70.6	32	50.7	54	48	75	7.51	−19.87	27	31,775	w.	30	n.	143	177	45	3.9
San Diego, Cal	29.92	30.02	.00	58.5	− 2.7	90	65.4	32	51.6	42	50	78	4.35	− 6.53	35	44,024	w.	35	w.	211†	82†	68†	3.8

*Additional directions. † Four days missing.

TABLE II.—*Observations at the Meteorological Observatory at Ponta Delgada, San Miguel, Azores.*

1894.	Pressure.					Temperature.					Relative humidity.	No. days—			No. days with—				Total rainfall.	Total evaporation.	Frequency of wind direction.							
	Mean.	Maximum.	Date.	Minimum.	Date.	Mean.	Maximum.	Date.	Minimum.	Date.		Clear.	Partly cloudy.	Cloudy.	Rain.	Snow.	Hail.	Thunder.			North.	Northeast.	East.	Southeast.	South.	Southwest.	West.	Northwest.	Calm.
																			mm.	mm.								
January	765.2	778.1	29	744.5	12	14.9	19.0	6	6.2	10	77	0	24	7	11	3	1	0	99.5	35.8	10	16	1	6	20	46	11	9	5
February	768.6	776.4	5	753.3	13	14.2	17.8	{11 18}	7.7	28	71	0	27	1	2	2	0	1	21.1	66.0	16	21	7	20	25	13	5	3	2
March	763.7	772.9	15	743.7	24	14.0	18.0	16	7.9	27	75	0	19	12	13	6	2	1	117.8	64.2	19	25	5	3	14	21	21	11	5
April	766.5	775.3	29	758.0	13	15.1	18.8	18	7.0	6	77	2	17	11	4	2	2	0	23.3	86.1	10	4	0	4	10	28	43	16	5
May	765.3	771.7	1	757.1	31	16.7	19.8	29	12.0	{8 8 19}	83	0	27	4	10	6	0	0	69.5	78.8	17	22	2	9	18	14	18	7	17
June	767.7	773.2	{15 16}	756.1	1	18.9	23.1	25	11.0	4	75	1	26	3	6	2	0	0	47.5	104.4	18	21	4	13	14	20	11	8	11
July	768.5	773.2	16	763.7	27	22.2	24.0	24	17.0	2	81	0	31	0	3	4	0	1	9.1	109.5	21	38	5	7	3	19	14	4	13
August	766.5	770.8	3	761.6	22	22.4	27.1	8	16.6	30	74	0	31	0	5	2	0	0	18.8	144.3	35	40	7	7	4	8	9	6	8
September	761.7	767.4	8	753.2	27	20.9	25.2	7	14.4	19	80	0	25	5	13	0	0	2	96.6	98.1	9	10	7	24	21	12	21	13	3
October	758.2	766.5	3	748.9	12	18.1	23.3	7	11.7	28	81	1	28	2	10	1	0	0	107.7	115.3	25	7	0	1	27	30	19	14	1
November	764.8	773.0	19	750.0	24	16.0	19.2	9	10.0	25	81	0	25	5	10	2	0	1	60.8	110.6	24	29	3	1	4	18	16	23	2
December	766.7	775.8	28	734.5	8	15.3	18.3	2	8.5	5	83	0	23	8	8	2	0	0	60.7	77.9	10	28	22	30	15	7	7	5	0

TABLE III.—*Accumulated departures of average monthly temperatures during* 1894.

Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual average.
	°	°	°	°	°	°	°	°	°	°	°	°	°
New England	+ 2.4	− 0.4	+ 5.5	+ 6.1	+ 6.7	+ 7.7	+ 4.1	+ 8.1	+10.5	+12.6	+ 9.1	+ 8.9	+ 0.74
Middle Atlantic States	+ 4.2	+ 2.4	+ 8.9	+ 9.3	+11.2	+12.2	+12.1	+12.0	+15.2	+16.1	+13.1	+13.4	+ 1.12
South Atlantic States	+ 3.9	+ 2.3	+ 7.6	+ 7.7	+ 8.4	+ 7.7	+ 5.2	+ 5.1	+ 7.0	+ 7.0	+ 4.9	+ 5.5	+ 0.46
Key West, Fla	+ 0.6	+ 1.0	+ 2.4	+ 3.0	+ 1.2	− 1.5	− 3.5	− 4.0	− 4.6	− 5.9	− 6.5	− 7.4	− 0.62
East Gulf States	+ 4.7	+ 1.5	+ 3.8	+ 4.8	+ 3.7	+ 2.6	− 0.1	− 0.9	+ 0.4	+ 0.1	− 1.6	− 0.5	− 0.04
West Gulf States	+ 5.3	+ 0.9	+ 2.2	+ 3.9	+ 4.5	+ 3.1	+ 0.6	− 1.1	− 0.2	+ 0.9	+ 0.5	+ 2.2	+ 0.18
Ohio Valley and Tennessee	+ 6.6	+ 3.3	+ 9.1	+ 9.6	+ 8.6	+10.3	+ 9.5	+11.3	+14.8	+15.5	+11.7	+12.5	+ 1.04
Lower Lake Region	+ 6.3	+ 3.8	+12.1	+14.5	+14.7	+17.6	+18.6	+18.7	+22.7	+24.7	+20.5	+22.7	+ 1.89
Upper Lake Region	+ 5.4	+ 5.0	+13.9	+17.0	+16.5	+21.6	+23.3	+23.6	+27.4	+29.1	+25.0	+29.4	+ 2.45
Extreme Northwest	+ 0.1	+ 1.8	+ 7.0	+ 9.8	+11.1	+16.5	+19.2	+22.5	+24.1	+25.5	+24.2	+32.4	+ 2.70
Upper Mississippi Valley	+ 4.9	+ 2.5	+ 9.9	+12.2	+13.0	+17.5	+18.7	+21.8	+24.7	+26.0	+21.5	+26.1	+ 2.18
Missouri Valley	+ 2.5	+ 1.3	+ 6.9	+ 9.2	+11.2	+13.6	+13.8	+17.8	+20.2	+22.6	+21.4	+26.5	+ 2.21
Northern slope	+ 2.0	− 2.2	− 3.1	− 1.5	+ 1.4	+ 1.6	+ 2.3	+ 5.0	+ 4.1	+ 6.1	+10.9	+12.1	+ 1.01
Middle slope	+ 4.9	− 2.1	+ 0.5	+ 2.8	+ 4.3	+ 3.9	+ 2.8	+ 3.8	+ 4.7	+ 7.9	+10.3	+10.7	+ 0.89
Southern slope	+ 4.7	− 2.6	− 0.8	+ 3.7	+ 5.8	+ 5.3	+ 3.9	− 0.4	+ 1.3	+ 4.9	+ 7.0	+ 7.9	+ 0.66
Southern plateau	− 1.8	− 7.6	− 9.9	− 9.4	+ 9.4	−13.0	−14.4	−16.3	−16.7	−14.5	−10.0	− 9.1	− 0.76
Middle plateau	+ 2.4	− 4.2	− 4.9	− 6.2	− 4.9	− 9.3	− 9.1	− 8.3	−10.5	− 8.7	− 4.4	− 8.9	− 0.74
Northern plateau	+ 4.6	+ 2.8	+ 1.4	− 1.4	− 2.9	− 5.4	− 4.8	− 2.0	− 4.0	− 3.8	+ 1.3	− 0.7	− 0.06
North Pacific	+ 1.1	− 1.0	− 4.0	− 6.2	− 8.2	− 9.4	− 9.8	− 7.3	− 7.6	− 9.0	− 7.6	−10.4	− 0.87
Middle Pacific	− 1.7	− 5.1	− 8.2	− 8.1	− 9.9	−13.4	−13.8	−13.2	−11.5	−10.5	− 6.8	− 9.1	− 0.76
South Pacific	− 2.4	− 6.0	− 9.3	−10.5	−12.8	− 16.8	−18.8	−20.3	−21.6	−21.9	−21.3	−22.2	− 1.85

TABLE IV.—*Accumulated departures of total monthly precipitations during* 1894

Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual sum.
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
New England	− 0.80	− 1.20	− 3.80	− 4.20	− 3.70	− 5.80	− 8.10	−10.10	−11.00	− 8.60	− 8.90	− 8.10	− 8.10
Middle Atlantic States	− 1.20	− 0.30	− 2.70	− 3.70	− 2.00	− 3.50	− 4.80	− 6.20	− 5.40	− 4.20	− 5.40	− 5.30	− 5.30
South Atlantic States	− 1.40	− 0.60	− 3.00	− 5.40	− 5.70	− 7.20	− 5.10	− 4.80	− 2.30	− 1.80	− 2.50	− 4.20	− 4.20
Key West, Fla	− 0.90	− 2.60	− 2.60	− 3.90	− 2.90	− 3.70	− 5.80	− 6.30	+ 3.60	+ 5.20	+ 3.60	+ 2.00	+ 2.00
East Gulf States	− 1.60	+ 1.60	+ 1.90	+ 0.20	− 1.40	− 4.80	− 3.30	− 2.90	− 4.20	− 4.70	− 7.90	− 9.00	− 9.00
West Gulf States	− 1.30	− 1.70	− 0.10	+ 0.40	− 2.20	− 3.10	− 2.00	+ 1.20	0.00	− 2.00	− 5.20	− 6.80	− 6.80
Ohio Valley and Tennessee	− 1.40	− 0.50	− 1.60	− 2.10	− 2.40	− 4.00	− 6.00	− 6.90	− 7.40	− 8.90	−11.40	−11.10	−11.10
Lower Lake Region	− 0.50	− 0.30	− 1.30	− 1.90	0.00	− 0.80	− 2.10	− 4.50	− 4.00	− 3.60	− 5.10	− 4.50	− 4.50
Upper Lake Region	− 0.20	− 0.80	− 0.30	0.00	+ 2.30	+ 2.10	0.00	− 1.70	− 1.10	− 1.40	− 1.50	− 2.00	− 2.00
Extreme Northwest	− 0.10	− 0.40	+ 0.60	+ 2.20	+ 2.00	+ 2.70	+ 0.30	− 0.70	− 0.50	− 0.10	− 0.10	− 0.50	− 0.50
Upper Mississippi Valley	− 0.30	− 0.60	− 0.20	− 0.30	− 1.50	− 4.60	− 7.60	− 9.50	− 9.70	−10.80	−11.70	−12.00	−12.00
Missouri Valley	+ 0.20	+ 0.10	0.00	− 0.10	− 2.80	− 2.84	− 5.14	− 8.24	− 7.14	− 7.64	− 8.44	− 8.84	− 8.84
Northern slope	0.00	− 0.20	+ 0.70	+ 1.30	+ 0.40	+ 0.20	− 0.30	− 1.10	− 0.90	− 1.00	− 1.20	− 1.40	− 1.40
Middle slope	− 0.40	0.00	− 0.60	− 0.80	− 0.40	+ 2.10	+ 1.40	− 0.20	+ 1.30	+ 0.90	+ 0.40	+ 0.40	+ 0.40
Southern slope	+ 0.30	− 0.10	0.00	− 3.20	− 1.00	− 0.40	− 1.20	+ 4.00	+ 1.70	− 0.20	− 2.90	− 3.70	− 3.70
Southern plateau	− 0.40	− 0.50	− 0.50	− 0.50	− 0.30	− 0.90	− 1.70	− 2.90	− 3.50	− 3.60	− 4.20	− 3.90	− 3.90
Middle plateau	+ 0.10	+ 0.10	− 0.20	− 0.60	− 0.00	+ 0.40	+ 0.70	+ 0.70	+ 1.20	+ 1.00	− 0.20	+ 0.20	+ 0.20
Northern plateau	+ 2.20	+ 2.00	+ 3.80	+ 4.00	+ 3.80	+ 3.20	+ 2.80	+ 2.60	+ 2.80	+ 2.90	+ 2.30	+ 0.90	+ 0.90
North Pacific	+ 2.00	+ 3.70	+ 7.80	+10.70	+10.60	+11.00	+10.50	+ 9.50	+11.70	+14.30	+14.80	+11.70	+11.70
Middle Pacific	+ 1.20	+ 0.50	− 0.60	− 2.30	− 2.30	− 2.10	− 2.10	− 2.10	− 1.30	− 1.20	− 2.80	+ 1.80	+ 1.80
South Pacific	− 0.90	− 2.20	− 3.50	− 4.70	− 4.60	− 4.60	− 4.60	− 4.60	− 4.20	− 4.70	− 5.50	− 4.60	− 4.60

TABLE V.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during the year 1894.*

Number.	Station.	Component direction from—				Resultant.	
		N.	S.	E.	W.	Direction from—	Duration.
	New England.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
1	Eastport, Me	232	241	129	301	s. 87 w.	172
2	Portland, Me	217	236	124	297	s. 84 w.	174
3	Northfield, Vt	234	383	72	141	s. 25 w.	164
4	Boston, Mass	191	196	144	374	s. 89 w.	230
5	Nantucket, Mass	231	191	158	307	n. 75 w.	155
6	Woods Holl, Mass	88	141	74	168	s. 60 w.	108
7	Block Island, R. I	216	205	177	349	n. 87 w.	172
8	New Haven, Conn	298	200	140	252	n. 49 w.	148
9	New London, Conn	231	223	111	328	n. 88 w.	217
	Middle Atlantic States.						
10	Albany, N. Y	226	311	92	197	s. 51 w.	135
11	New York, N. Y	237	253	157	273	s. 82 w.	117
12	Harrisburg, Pa	191	161	239	252	n. 23 w.	33
13	Philadelphia, Pa	243	214	165	281	n. 76 w.	120
14	Atlantic City, N. J	213	235	160	291	s. 81 w.	134
15	Baltimore, Md	227	218	189	256	n. 82 w.	67
16	Washington, D. C	265	250	166	201	n. 67 w.	38
17	Lynchburg, Va	215	237	182	286	s. 78 w.	106
18	Norfolk, Va	219	239	226	208	s. 42 e.	27
	South Atlantic States.						
19	Charlotte, N. C	133	322	221	238	s. 5 w.	189
20	Hatteras, N. C	259	232	166	238	n. 69 w.	77
21	Kittyhawk, N. C	234	309	334	235	s. 52 e.	124
22	Raleigh, N. C	245	275	136	227	s. 72 w.	96
24	Wilmington, N. C	216	260	181	266	s. 62 w.	96
25	Charleston, S. C	198	271	196	238	s. 30 w.	84
26	Augusta, Ga	212	215	221	224	s. 45 w.	4
27	Savannah, Ga	201	302	166	226	s. 30 w.	117
28	Jacksonville, Fla	237	248	240	177	s. 79 e.	64
	Florida Peninsula.						
29	Jupiter, Fla	167	260	263	188	s. 39 e.	119
30	Key West, Fla	201	157	456	55	n. 84 e.	402
31	Tampa, Fla	279	147	263	203	n. 24 e.	145
32	Titusville, Fla	179	237	255	220	s. 31 e.	68
	Eastern Gulf States.						
35	Atlanta, Ga	229	174	236	275	n. 35 w.	67
34	Pensacola, Fla	273	232	208	223	n. 20 w.	44
35	Mobile, Ala	322	232	108	196	n. 45 w.	127
36	Montgomery, Ala	244	191	232	208	n. 24 e.	58
37	Meridian, Miss	259	236	212	175	n. 58 e.	44
38	Vicksburg, Miss	207	251	279	158	s. 70 e.	129
39	New Orleans, La	315	255	281	224	n. 44 e.	83
	Western Gulf States.						
40	Shreveport, La	184	328	250	136	s. 39 e.	184
41	Fort Smith, Ark	160	156	410	116	e.	294
42	Little Rock, Ark	208	280	195	203	s. 6 w.	73
43	Corpus Christi, Tex	171	414	395	58	s. 67 e.	360
44	Galveston, Tex	149	376	202	118	s. 32 e.	269
45	Palestine, Tex	193	298	221	191	s. 16 e.	109
46	San Antonio, Tex	176	267	381	71	s. 74 e.	323
	Ohio Valley and Tennessee.						
47	Chattanooga, Tenn	190	266	179	251	s. 43 w.	105
48	Knoxville, Tenn	254	149	217	262	n. 23 w.	114
49	Memphis, Tenn	205	261	229	195	s. 31 e.	66
50	Nashville, Tenn	226	247	198	228	s. 55 w.	37
51	Lexington, Ky	167	318	154	293	s. 43 w.	205
52	Louisville, Ky	185	319	174	194	e. 9 w.	136
53	Indianapolis, Ind	204	279	169	262	s. 51 w.	101
54	Cincinnati, Ohio	184	264	238	238	s.	80
55	Columbus, Ohio	204	275	180	238	s. 39 w.	92
56	Pittsburg, Pa	221	236	150	291	s. 84 w.	142
57	Parkersburg, W. Va	125	299	243	204	s. 13 e.	178
	Lower Lake Region.						
58	Buffalo, N. Y	181	226	152	357	s. 78 w.	210
59	Oswego, N. Y	155	312	153	251	s. 32 w.	185
60	Rochester, N. Y	133	319	163	332	s. 42 w.	251
61	Erie, Pa	152	308	131	290	s. 46 w.	223
62	Cleveland, Ohio	161	302	249	218	s. 12 e.	144
63	Sandusky, Ohio	141	267	187	296	s. 40 w.	167
64	Toledo, Ohio	183	206	160	338	s. 83 w.	180
65	Detroit, Mich	166	234	186	335	s. 66 w.	164
	Upper Lake Region.						
66	Alpena, Mich	194	245	174	292	s. 66 w.	128
67	Grand Haven, Mich	194	234	215	263	s. 50 w.	62
68	Marquette, Mich	264	224	107	282	n. 77 w.	180
69	Port Huron, Mich	196	292	156	266	s. 49 w.	146
70	Sault Ste. Marie, Mich	173	244	269	248	s. 16 e.	74
71	Chicago, Ill	186	298	184	261	s. 35 w.	136
72	Milwaukee, Wis	185	251	167	296	s. 63 w.	145
73	Green Bay, Wis	201	338	124	213	s. 34 w.	163
74	Duluth, Minn	290	102	233	272	n. 12 w.	192
	North Dakota.						
75	Moorhead, Minn	277	255	127	202	n. 74 w.	78
76	Saint Vincent, Minn	281	222	170	197	n. 24 w.	65
77	Bismarck, N. Dak	293	159	211	237	n. 11 w.	136
78	Williston, N. Dak	203	260	169	251	s. 55 w.	100
	Upper Mississippi Valley.						
79	Saint Paul, Minn	158	276	242	271	s. 76 w.	121
80	La Crosse, Wis	200	358	82	174	s. 32 w.	175
81	Davenport, Iowa	166	263	179	285	s. 48 w.	144
82	Des Moines, Iowa	238	241	152	264	s. 87 w.	112
84	Keokuk, Iowa	194	264	151	263	s. 50 w.	156
85	Cairo, Ill	231	310	163	163	s.	79
86	Springfield, Ill	211	305	120	231	s. 50 w.	146
87	Hannibal, Mo	183	254	162	274	s. 58 w.	133
88	Saint Louis, Mo	200	301	173	213	s. 22 w.	109
	Missouri Valley.						
89	Columbia, Mo	91	139	108	122	s. 16 w.	50
90	Kansas City, Mo	214	323	210	149	s. 29 e.	125
91	Springfield, Mo	192	333	238	141	s. 34 e.	171
92	Omaha, Nebr	227	286	176	210	s. 30 w	68
93	Valentine, Nebr	241	220	105	302	n. 84 w.	198
94	Sioux City Iowa	265	299	149	152	s. 5 w.	34
95	Pierre, S. Dak	231	246	230	212	s. 50 e.	23
96	Huron, S. Dak	251	252	206	223	s. 87 w.	17
	Northern Slope.						
98	Havre, Mont	207	163	126	405	n. 81 w.	282
99	Miles City, Mont	205	260	195	261	s. 50 w.	86
100	Helena, Mont	107	300	55	458	s. 64 w.	449
101	Rapid City, S. Dak	216	193	128	311	n. 83 w.	184
102	Cheyenne, Wyo	273	169	56	387	n. 73 w.	347
103	Lander, Wyo	169	272	127	326	s. 63 w.	224
105	North Platte, Nebr	193	256	154	289	s. 65 w.	149
	Middle Slope.						
107	Denver, Colo	202	312	133	249	s. 46 w.	160
109	Pueblo, Colo	263	145	195	292	n. 39 w.	153
110	Concordia, Kans	195	315	160	167	s. 3 w.	120
111	Dodge City, Kans	229	290	235	141	s. 57 e.	112
112	Wichita, Kans	235	336	181	99	s. 39 e.	130
113	Oklahoma, Okla	209	366	171	131	s. 14 e.	162
	Southern Slope.						
114	Abilene, Tex	178	374	185	146	s. 12 e.	200
115	Amarillo, Tex	183	393	92	156	s. 17 w.	219
	Southern Plateau.						
116	El Paso, Tex	235	104	256	315	n. 24 w.	143
117	Santa Fe, N. Mex	214	267	282	184	s. 62 e.	111
118	Tucson, Ariz	164	323	202	250	s. 17 w.	166
119	Yuma, Ariz	274	172	177	264	n. 41 w.	134
	Middle Plateau.						
....	Carson City, Nev	195	259	111	360	s. 76 w.	257
121	Winnemucca, Nev	182	221	209	282	s. 62 w.	83
122	Salt Lake City, Utah	184	273	238	215	s. 13 e.	102
	Northern Plateau.						
123	Baker City, Oreg	199	317	238	224	s. 7 e.	120
124	Idaho Falls, Idaho	196	363	108	246	s. 40 w.	217
125	Spokane, Wash	136	362	190	193	s. 1 w.	226
126	Walla Walla, Wash	94	440	115	200	s. 14 w.	356
	North Pacific Coast Region.						
127	Fort Canby, Wash	207	188	208	259	n. 70 w.	54
129	Port Angeles, Wash	58	333	145	292	s. 28 w.	312
130	Seattle, Wash	190	290	250	138	s. 49 e.	150
131	Tatoosh Island, Wash	51	283	280	259	s. 5 e.	232
132	Portland, Oreg	279	275	86	280	n. 89 w.	194
133	Roseburg, Oreg	258	181	167	252	n. 48 w.	115
	Middle Pacific Coast Region.						
134	Eureka, Cal.*	262	230	130	259	n. 76 w.	133
135	Red Bluff, Cal	300	241	145	237	n. 58 w.	109
136	Sacramento, Cal	199	376	131	216	s. 26 w.	196
137	San Francisco, Cal	67	419	79	398	s. 42 w.	475
	South Pacific Coast Region.						
138	Fresno, Cal	335	100	161	363	n. 40 w.	310
139	Los Angeles, Cal	180	90	186	374	n. 63 w.	209
140	San Diego, Cal	251	129	102	382	n. 67 w.	306

*Observations for four days missing.

TABLE VI.—*Prevailing and resultant winds from self-registers for* 1894.

Number.	Station.	Prevailing wind.		Total movement.		Resultant direction.			Resultant movement.		Azimuth of movement minus direction.	Ratio of resultant movement to total movement.
		Direction from.	Duration.	Monthly.	Hourly average.	Direction from.	Duration.	Average hourly velocity.	Direction from.	Amount.		
	(1)	(2)	(3) Hours.	(4) Miles.	(5) Miles.	(6)	(7) Hours.	(8) Miles.	(9)	(10) Miles.	(11) °	(12)
1	Eastport, Me	SW.	2,034	93,205	10.7	S. 85 W.	2,098	8.1	N. 68 W.	17,024	+ 27	0.183
2	Portland, Me	S.	1,479	66,059	7.6	S. 80 W.	1,896	6.2	S. 85 W.	11,711	+ 5	0.177
4	Boston, Mass	W.	2,089	99,117	11.3	W.	2,577	12.5	N. 85 W.	32,180	+ 5	0.325
5	Nantucket, Mass	W.	1,764	105,502	12.1	N. 74 W.	2,018	7.1	N. 38 W.	14,308	+ 36	0.136
8	New Haven, Conn	SW.	1,686	76,954	8.8	N. 68 W.	1,475	9.6	N. 41 W.	14,169	+ 27	0.184
10	Albany, N. Y	S.	2,692	66,277	7.6	S. 52 W.	1,613	8.4	S. 46 W.	13,622	— 6	0.206
11	New York, N. Y	SW.	1,877	90,177	10.3	S. 78 W.	1,704	12.5	N. 74 W.	21,281	+ 28	0.236
13	Philadelphia, Pa	SW.	1,857	89,436	10.2	N. 76 W.	1,623	12.5	N. 53 W.	20,228	+ 23	0.226
15	Baltimore, Md	NW.	1,470	64,369	7.4	S. 89 W.	967	14.6	N. 67 W.	14,106	+ 24	0.219
16	Washington, D. C	S.	1,979	57,073	6.5	S. 80 W.	857	13.3	N. 65 W.	11,378	+ 35	0.199
17	Lynchburg, Va	SW.	1,676	37,532	4.3	S. 80 W.	1,298	7.4	N. 73 W.	9,578	+ 27	0.255
18	Norfolk, Va	SW.	1,545	74,476	8.5	S. 14 E.	192	4.5	S. 51 W.	8,600	+ 63	0.115
24	Wilmington, N. C	SW.	2,290	73,340	8.4	S. 66 W.	1,262	9.9	S. 67 W.	12,553	+ 1	0.171
26	Augusta, Ga	NW.	1,276	43,720	5.0	S. 68 W.	307	14.8	S. 62 W.	4,551	— 6	0.104
27	Savannah, Ga	S.	1,947	70,063	8.0	S. 28 W.	1,434	5.8	S. 38 W.	8,334	+ 10	0.119
28	Jacksonville, Fla	NE.	1,613	63,544	7.3	S. 51 E.	820	8.9	S. 27 E.	7,285	+ 24	0.115
30	Key West, Fla	E.	2,771	84,420	9.6	N. 86 E.	4,460	10.3	N. 72 E.	45,882	— 14	0.543
33	Atlanta, Ga	NW.	1,955	82,055	9.4	N. 75 W.	816	15.1	N. 74 W.	12,348	+ 1	0.150
38	Vicksburg, Miss	SE.	1,560	58,170	6.7	S. 62 E.	851	9.7	S. 33 E.	8,272	+ 29	0.142
39	New Orleans, La	SE.	1,620	67,384	7.7	S. 85 E.	1,560	8.0	N. 69 E.	12,555	— 26	0.186
44	Galveston, Tex	SE.	2,385	94,461	10.8	S. 34 E.	3,355	9.1	S. 42 E.	30,665	— 8	0.325
48	Knoxville, Tenn	SW.	1,829	42,004	4.8	N. 61 W.	1,290	8.5	N. 87 W.	10,930	— 26	0.260
49	Memphis, Tenn	NW.	1,514	62,139	7.1	S. 16 W.	569	8.3	S. 17 W.	4,724	+ 1	0.076
50	Nashville, Tenn.*	NW.	1,581	50,302	5.8	S. 56 W.	746	21.2	S. 25 W.	15,835	— 31	0.315
52	Louisville, Ky	S.	2,104	69,656	8.0	S. 20 W.	1,877	9.6	S. 40 W.	18,021	+ 20	0.259
53	Indianapolis, Ind	NW.	1,746	57,556	6.6	S. 54 W.	1,729	7.8	S. 53 W.	13,404	— 1	0.233
54	Cincinnati, Ohio	SE.	1,733	64,659	7.4	S. 16 W.	1,294	13.8	S. 80 W.	17,903	+ 64	0.277
55	Columbus, Ohio	SW.	1,482	76,463	8.7	S. 51 W.	1,495	15.1	S. 72 W.	22,504	+ 21	0.294
56	Pittsburg, Pa	NW.	1,855	56,621	6.5	S. 87 W.	1,987	9.0	S. 81 W.	17,808	— 6	0.315
58	Buffalo, N. Y	SW.	2,136	100,675	11.5	S. 81 W.	2,836	18.0	S. 85 W.	50,990	+ 4	0.506
60	Rochester, N. Y	SW.	3,311	71,294	8.2	S. 50 W.	3,077	10.4	S. 61 W.	33,023	+ 11	0.463
62	Cleveland, Ohio	SE.	2,547	113,040	12.9	S. 13 W.	1,575	18.2	S. 30 W.	28,710	+ 17	0.254
64	Toledo, Ohio	SW.	1,802	89,498	10.2	S. 84 W.	2,224	12.8	S. 78 W.	28,547	— 6	0.319
65	Detroit, Mich	SW	2,713	96,139	11.0	S. 74 W.	2,292	17.1	S. 71 W.	39,119	— 3	0.407
66	Alpena, Mich	NW.	1,654	86,024	9.8	S. 65 W.	1,460	10.0	S. 70 W.	14,538	+ 5	0.169
67	Grand Haven, Mich	SW.	2,010	94,892	10.8	S. 67 W.	1,353	19.1	S. 65 W.	25,901	— 2	0.273
68	Marquette, Mich	NW.	1,881	92,902	10.6	N. 71 W.	2,136	12.5	S. 82 W.	26,788	— 27	0.288
70	Sault Ste. Marie, Mich	SE.	2,867	74,781	8.7	S. 21 E.	726	5.6	S. 55 W.	4,040	+ 76	0.054
71	Chicago, Ill	SW.	1,968	150,612	17.2	S. 47 W.	1,622	22.8	S. 48 W.	36,906	+ 1	0.245
72	Milwaukee, Wis	SW.	1,542	91,834	10.5	S. 59 W.	1,503	13.3	S. 68 W.	20,008	+ 9	0.218
74	Duluth, Minn	NE.	1,783	58,318	6.7	N. 4 W.	1,901	10.2	N. 17 W.	19,443	— 13	0.333
75	Moorhead, Minn	S.	2,035	99,443	11.4	N. 81 W.	948	8.2	S. 54 W.	7,808	— 45	0.078
77	Bismarck, N. Dak	NW.	2,649	93,301	10.7	N. 19 W.	1,404	17.9	N. 21 W.	25,075	— 2	0.269
79	Saint Paul, Minn	SE.	2,613	70,290	8.0	S. 18 W.	1,694	8.6	S. 46 W.	14,633	+ 28	0.208
81	Davenport, Iowa	SW	2,217	81,604	9.3	S. 48 W.	2,142	11.5	S. 60 W.	24,650	+ 12	0.302
82	Des Moines, Iowa	SW.	1,738	73,435	8.4	S. 81 W.	1,601	11.8	S. 73 W.	18,916	— 8	0.258
88	Saint Louis, Mo	S.	1,836	97,820	11.2	S. 30 W.	1,659	15.6	S. 40 W.	25,923	+ 10	0.265
90	Kansas City, Mo	S.	1,780	79,811	9.1	S. 25 E.	1,188	9.4	S. 3 W.	11,467	+ 28	0.144
92	Omaha, Nebr	SE.	2,030	72,829	8.3	S. 37 W.	775	11.4	S. 17 W.	8,834	— 20	0.121
96	Huron, S. Dak	SE.	2,628	125,104	14.3	S. 35 W.	523	23.4	S. 12 W.	12,254	— 23	0.098
98	Havre, Mont	SW.	2,373	83,799	9.6	N. 86 W.	3,356	12.4	S. 81 W.	41,626	— 13	0.497
100	Helena, Mont	SW.	3,664	68,363	7.8	S. 69 W.	4,797	9.2	S. 62 W.	44,040	— 7	0.643
107	Denver, Colo	S.	2,145	68,215	7.8	S. 36 W.	1,711	6.3	S. 57 W.	10,804	+ 21	0.158
111	Dodge City, Kans	SE.	2,238	105,121	12.0	S. 61 E.	1,584	16.6	S. 44 E.	26,332	+ 17	0.250
114	Abilene, Tex	S.	1,939	88,956	10.2	S. 2 E.	2,505	11.6	S. 1 W.	29,097	+ 3	0.327
116	El Paso, Tex	NW.	2,701	86,103	9.8	N. 25 W.	1,778	16.8	N. 44 W.	29,890	— 19	0.347
117	Santa Fe, N. Mex	SW.	1,836	60,697	6.9	S. 50 E.	715	6.3	S. 20 W.	4,488	+ 70	0.074
119	Yuma, Ariz	W.	1,356	58,760	6.7	N. 57 W.	1,251	11.4	N. 72 W.	14,255	— 15	0.243
122	Salt Lake City, Utah	SE.	2,371	53,505	6.1	S. 20 E.	1,459	5.7	S. 21 W.	8,268	+ 41	0.155
125	Spokane, Wash	SW.	2,182	57,126	6.5	S. 1 E.	2,667	11.4	S. 13 W.	30,355	+ 14	0.531
132	Portland, Oregon	NW.	2,750	80,714	9.2	N. 87 W.	2,303	11.3	S. 70 W.	26,093	— 23	0.323
133	Roseburg, Oregon	NW.	1,491	29,074	3.3	N. 57 W.	1,112	5.6	N. 65 W.	6,225	— 8	0.214
137	San Francisco, Cal	SW.	4,871	96,367	11.0	S. 44 W.	5,120	13.9	S. 42 W.	71,148	— 2	0.738
140	San Diego, Cal	W.	2,362	43,074	5.0	N. 73 W.	3,792	8.5	N. 81 W.	24,813	— 8	0.568

*Record for 6½ days missing.

TABLE VII.—*Mean temperature of wet-bulb thermometer for* 1894.

No.	Stations.	8 a. m.	8 p. m.	No.	Stations.	8 a. m.	8 p. m.	No.	Stations.	8 a. m.	8 p. m.	No.	Stations.	8 a. m.	8 p. m.
	New England.	°	°		*East. Gulf States*—Con.	°	°		*Up. Lake Region.*—Con.	°	°		*Middle Slope*—Con.	°	°
1	Eastport, Me	38	38	36	Meridian, Miss	54	59	71	Milwaukee, Wis	42	45	105	Dodge City, Kans	40	47
2	Portland, Me	41	43	37	Vicksburg, Miss	56	60	72	Green Bay, Wis	38	43	106	Wichita, Kans	45	50
3	Northfield, Vt	38	41	38	New Orleans, La	62	63	73	Duluth, Minn	36	40	107	Oklahoma, Okla	48	54
4	Boston, Mass	44	46		*Western Gulf States.*				*North Dakota.*				*Southern Slope.*		
5	Nantucket, Mass	43	46	39	Shreveport, La	56	60	74	Moorhead, Minn	33	40	108	Abilene, Tex	51	55
6	Woods Holl, Mass		46	40	Fort Smith, Ark	50	57	75	St. Vincent, Minn	30	38	109	Amarillo, Tex	41	48
7	Block Island, R. I	46	47	41	Little Rock, Ark	52	56	76	Bismarck, N. Dak	32	40		*Southern Plateau.*		
8	New Haven, Conn	44	48	42	Corpus Christi, Tex	65	68	77	Williston, N. Dak	30	38	110	El Paso, Tex	42	50
9	New London, Conn	45	47	43	Galveston, Tex	64	65		*Upper Mississippi Valley.*			111	Santa Fe, N. Mex	34	40
	Middle Atlantic States.			44	Palestine, Tex	56	61	78	St. Paul, Minn	38	43	112	Tucson, Ariz	45	54
10	Albany, N. Y	43	46	45	San Antonio, Tex	56	62	79	La Crosse, Wis	40	45	113	Yuma, Ariz	52	59
11	New York, N. Y	46	49		*Ohio Val. and Tennessee.*			80	Davenport, Iowa	42	47		*Middle Plateau.*		
12	Harrisburg, Pa	46	50	46	Chattanooga, Tenn	51	55	81	Des Moines, Iowa	40	47	114	Carson City, Nev	35	44
13	Philadelphia, Pa	48	50	47	Knoxville, Tenn	50	54	82	Keokuk, Iowa	44	49	115	Winnemucca, Nev	33	43
14	Atlantic City, N. J	49	50	48	Memphis, Tenn	52	57	83	Cairo, Ill	49	54	116	Salt Lake City, Utah	39	44
15	Baltimore, Md	48	50	49	Nashville, Tenn	50	54	84	Springfield, Ill	44	49		*Northern Plateau.*		
16	Washington, D. C	48	51	50	Lexington, Ky	48	50	85	Hannibal, Mo	44	50	117	Baker City, Oreg	34	43
17	Lynchburg, Va	50	53	51	Louisville, Ky	48	51	86	St. Louis, Mo	48	52	118	Idaho Falls, Idaho	32	41
18	Norfolk, Va	54	56	52	Indianapolis, Ind	45	49		*Missouri Valley.*			119	Spokane, Wash	38	44
	South Atlantic States.			53	Cincinnati, Ohio	46	50	87	Columbia, Mo		50	120	Walla Walla, Wash	43	50
19	Charlotte, N. C	51	54	54	Columbus, Ohio	45	49	88	Kansas City, Mo	45	51		*N. Pacific Coast Region.*		
20	Hatteras, N. C	59	59	55	Pittsburg, Pa	46	50	89	Springfield, Mo	46	51	121	Fort Canby, Wash	46	48
21	Kittyhawk, N. C	56	57	56	Parkersburg, W. Va	47	52	90	Omaha, Nebr	41	48	122	Port Angeles, Wash	41	46
22	Raleigh, N. C	52	55		*Lower Lakes Region.*			91	Valentine, Nebr	36	44	123	Seattle, Wash	44	49
23	Wilmington, N. C	57	60	57	Buffalo, N. Y	44	45	92	Sioux City, Iowa	38	45	124	Tatoosh Island, Wash	45	46
24	Charleston, S. C	59	61	58	Oswego, N. Y	42	44	93	Pierre, S. Dak	36	44	125	Portland, Oreg	44	50
25	Augusta, Ga	55	58	59	Rochester, N. Y	43	45	94	Huron, S. Dak	34	42	126	Roseburg, Oreg	43	52
26	Savannah, Ga	60	62	60	Erie, Pa	45	48		*Northern Slope.*				*Mid. Pacific Coast Reg.*		
27	Jacksonville, Fla	62	64	61	Cleveland, Ohio	44	46	95	Havre, Mont	32	41	127	Eureka, Cal	46	51
	Florida Peninsula.			62	Sandusky, Ohio	44	48	96	Miles City, Mont	34	42	128	Red Bluff, Cal	48	56
28	Jupiter, Fla	68	69	63	Toledo, Ohio	43	47	97	Helena, Mont	33	40	129	Sacramento, Cal	48	56
29	Key West, Fla	70	70	64	Detroit, Mich	43	46	98	Rapid City, S. Dak	36	42	130	San Francisco, Cal	49	52
30	Tampa, Fla	66	67		*Upper Lake Region.*			99	Cheyenne, Wyo	34	41		*S. Pacific Coast Region.*		
31	Titusville, Fla	66	67	65	Alpena, Mich	40	42	100	Lander, Wyo	29	39	131	Fresno, Cal	48	56
	Eastern Gulf States.			66	Grand Haven, Mich	42	45	101	North Platte, Nebr	36	46	132	Los Angeles, Cal	49	55
32	Atlanta, Ga	53	56	67	Marquette, Mich	38	40		*Middle Slope.*			133	San Diego, Cal	51	56
33	Pensacola, Fla	60	63	68	Port Huron, Mich	41	45	102	Denver, Colo	36	44				
34	Mobile, Ala	60	63	69	Sault Ste. Marie, Mich	36	39	103	Pueblo, Colo	34	44				
35	Montgomery, Ala	56	60	70	Chicago, Ill	43	46	104	Concordia, Kans	42	48				

TABLE VIII.—*Total number of thunderstorms reported during* 1894.

States.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual total.
Alabama	13	26	33	40	33	40	39	48	14	4	11	18	319
Arizona	0	1	5	3	7	9	91	64	15	13	0	1	209
Arkansas	5	46	89	85	67	36	55	70	38	17	11	8	527
California	6	1	2	9	23	0	33	40	1	1	0	13	119
Colorado	0	2	9	20	77	107	236	148	44	7	0	0	650
Connecticut	1	2	3	16	45	49	67	39	22	2	6	0	252
Delaware	0	4	7	8	18	16	12	5	5	3	0	2	75
Dist. of Columbia	0	0	3	8	9	9	6	7	2	1	0	0	45
Florida	7	40	41	50	68	183	281	319	117	20	12	28	1,366
Georgia	2	17	59	37	69	94	84	97	15	3	7	21	505
Idaho	1	0	2	10	24	34	19	24	4	7	1	0	126
Illinois	12	2	69	89	126	190	86	76	113	39	9	10	821
Indiana	7	2	53	37	61	66	28	38	22	20	0	13	347
Indian Territory	1	2	6	8	6	8	6	0	2	2	1	0	42
Iowa	0	0	81	148	65	181	74	93	121	39	3	0	805
Kansas	0	3	52	92	88	131	76	57	119	32	7	5	692
Kentucky	2	0	44	31	43	80	52	51	24	7	3	6	343
Louisiana	20	73	143	108	149	162	224	162	91	25	21	30	1,308
Maine	2	0	1	2	8	59	41	49	16	11	4	0	193
Maryland	3	6	36	36	74	80	63	50	39	15	4	3	409
Massachusetts	1	4	0	24	78	127	150	68	31	16	2	0	501
Michigan	0	25	43	46	151	125	66	43	77	33	0	10	619
Minnesota	0	0	73	153	152	174	109	110	73	78	0	1	923
Mississippi	8	29	80	74	64	104	114	69	32	4	9	13	600
Missouri	13	20	121	197	234	334	223	168	212	102	31	35	1,690
Montana	0	0	1	17	38	40	26	32	5	3	0	0	162
Nebraska	3	0	32	58	43	101	57	60	46	22	1	0	423
Nevada	0	0	8	7	23	5	89	85	4	9	0	0	230
New Hampshire	1	5	0	11	24	83	66	38	31	4	0	4	267
New Jersey	1	28	41	44	116	150	110	98	88	24	5	5	762
New Mexico	0	1	4	4	16	11	22	35	4	3	0	0	100
New York	3	7	14	43	94	183	121	92	64	23	5	2	651
North Carolina	2	21	102	60	219	163	154	121	43	35	3	43	966
North Dakota	0	0	6	30	33	25	23	35	13	6	0	6	177
Ohio	9	12	163	171	329	475	190	170	136	69	2	34	1,760
Oklahoma	2	4	18	20	10	15	10	7	5	5	1	2	99
Oregon	7	1	0	15	52	30	46	34	3	0	1	3	198
Pennsylvania	1	13	45	70	103	205	170	135	144	49	0	7	1,059
Rhode Island	0	0	1	7	11	8	10	17	5	5	1	0	65
South Carolina	3	4	64	63	113	125	154	99	41	16	18	16	716
South Dakota	0	0	8	47	33	45	49	52	20	11	0	0	255
Tennessee	9	19	77	70	99	103	80	81	25	7	14	6	590
Texas	25	32	60	86	64	68	71	76	41	18	15	7	503
Utah	0	0	7	2	24	11	35	54	4	6	0	1	144
Vermont	0	2	1	16	15	55	53	43	18	9	0	0	212
Virginia	0	5	32	59	119	64	55	47	11	4	2	9	407
Washington	2	0	2	7	79	47	23	31	9	5	1	1	207
West Virginia	0	7	36	45	63	74	37	41	20	12	1	4	340
Wisconsin	0	0	58	104	160	163	82	55	80	46	1	0	749
Wyoming	0	0	0	5	6	9	11	6	1	1	0	0	39

TABLE IX.—*Number of days on which thunderstorms were reported.*

State.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Alabama	4	11	14	14	16	17	23	23	7	4	2	4	139
Arizona	0	1	3	3	3	3	27	26	7	5	0	1	79
Arkansas	3	10	18	16	23	11	18	21	16	7	5	4	152
California	5	1	2	3	9	0	12	11	1	1	0	7	52
Colorado	0	2	6	11	22	21	31	26	13	5	0	0	137
Connecticut	1	2	2	5	9	13	15	6	5	1	3	0	62
Delaware	0	3	4	2	11	10	11	4	3	3	0	1	52
Dist. of Columbia	0	0	3	3	3	9	9	6	7	2	1	0	40
Florida	2	12	16	14	21	29	31	31	23	8	4	4	195
Georgia	2	9	16	15	25	21	24	30	8	3	3	3	159
Idaho	1	0	2	6	14	16	12	15	4	6	1	0	77
Illinois	3	2	15	14	19	27	17	15	18	8	2	4	144
Indiana	3	2	7	9	16	19	9	13	12	7	0	3	100
Indian Territory	1	2	5	6	4	5	4	0	2	2	1	0	32
Iowa	0	0	12	15	14	22	14	15	16	10	2	0	120
Kansas	0	3	9	21	18	23	20	18	20	11	3	4	150
Kentucky	2	0	9	11	16	21	17	18	10	4	2	3	113
Louisiana	10	7	21	21	23	23	28	29	17	6	8	8	210
Maine	1	0	1	1	4	15	18	17	4	6	4	0	71
Maryland	3	4	10	9	19	21	19	16	11	4	1	1	117
Massachusetts	1	2	0	5	9	18	19	13	7	2	2	0	78
Michigan	0	1	13	8	20	18	17	13	20	11	0	2	123
Minnesota	0	0	10	12	17	20	20	19	17	14	0	1	131
Mississippi	5	12	16	13	22	20	24	24	15	2	4	4	161
Missouri	4	8	16	16	25	26	22	19	22	18	7	8	191
Montana	0	0	1	7	13	18	14	15	4	2	0	9	74
Nebraska	3	0	6	13	14	22	19	16	15	8	1	0	117
Nevada	0	0	3	3	9	5	25	22	3	6	0	0	76
New Hampshire	1	1	0	4	7	19	19	10	9	2	0	3	75
New Jersey	1	6	8	6	15	25	17	14	9	5	2	1	109
New Mexico	0	1	2	4	10	7	18	21	4	3	0	0	70
New York	3	3	5	5	16	25	24	21	11	8	2	1	124
North Carolina	2	7	15	13	28	24	25	22	13	8	3	6	166
North Dakota	0	0	4	10	15	12	13	13	8	4	0	1	80
Ohio	5	3	12	13	28	22	20	18	18	17	1	3	160
Oklahoma	1	1	5	10	7	8	6	6	3	3	1	2	53
Oregon	6	1	0	5	13	12	13	17	2	0	1	2	72
Pennsylvania	1	4	8	7	20	24	24	15	15	11	0	3	132
Rhode Island	0	0	1	2	5	5	6	5	5	1	1	0	31
South Carolina	2	3	13	10	27	19	28	25	15	4	5	4	155
South Dakota	0	0	2	14	16	21	21	19	11	7	0	0	111
Tennessee	5	6	11	16	24	22	22	21	12	4	3	3	149
Texas	10	10	21	21	23	20	26	28	17	10	9	3	198
Utah	0	0	3	2	12	8	18	23	3	4	0	1	74
Vermont	0	2	1	6	6	16	20	12	8	4	0	0	75
Virginia	0	3	10	10	25	19	19	16	5	3	1	5	116
Washington	2	0	2	3	8	7	10	9	5	4	1	1	52
West Virginia	0	3	4	8	18	20	14	15	10	2	1	1	96
Wisconsin	0	0	11	9	19	20	16	17	16	14	1	0	123
Wyoming	0	0	0	4	4	9	11	5	1	1	0	0	35

TABLE X.—*Total number of auroras reported during* 1894.

State.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Alabama	0	0	1	0	0	0	0	0	0	0	0	0	1
Arizona	0	2	0	0	0	0	0	0	0	0	0	0	2
Arkansas	0	0	1	0	0	0	0	0	0	0	0	0	1
California	0	29	0	1	0	0	0	12	0	0	0	0	42
Colorado	2	34	9	0	0	0	0	4	0	1	0	1	51
Connecticut	9	15	19	3	1	0	2	1	1	0	0	0	51
Delaware	0	3	6	1	0	0	4	0	2	4	0	0	20
Dist. of Columbia	1	1	1	0	1	0	0	0	0	0	0	1	5
Florida	0	0	0	0	0	0	0	0	0	0	0	0	0
Georgia	0	0	1	0	0	0	0	1	0	0	0	0	2
Idaho	1	9	7	1	1	0	1	9	1	0	0	0	30
Illinois	1	41	28	1	2	1	1	0	4	0	0	0	79
Indiana	2	29	24	2	0	1	2	2	2	0	0	5	69
Indian Territory	0	0	0	0	0	0	0	0	0	0	0	0	0
Iowa	3	90	23	11	8	3	15	11	17	2	6	1	180
Kansas	2	23	4	0	0	1	1	5	2	0	1	0	39
Kentucky	1	12	22	0	1	0	0	0	0	0	0	0	36
Louisiana	0	0	0	0	0	0	0	2	0	0	0	0	2
Maine	9	27	18	9	5	5	4	1	6	8	3	1	96
Maryland	7	10	15	1	3	0	2	0	0	0	2	0	40
Massachusetts	23	67	67	9	4	0	20	1	5	2	1	1	200
Michigan	4	51	33	25	10	8	11	1	8	3	0	0	154
Minnesota	19	147	53	22	34	24	39	20	43	16	15	3	435
Mississippi	0	0	3	0	0	0	0	2	0	0	0	0	5
Missouri	3	54	7	0	0	0	1	1	1	1	0	0	68
Montana	9	23	9	6	6	4	7	7	11	7	4	2	95
Nebraska	7	59	8	1	0	7	5	6	13	5	2	0	113
Nevada	0	35	4	0	0	1	0	7	0	0	0	0	47
New Hampshire	14	43	24	12	17	9	14	9	9	4	3	0	158
New Jersey	13	43	39	2	3	1	2	1	1	0	0	1	106
New Mexico	0	1	0	0	0	0	0	0	0	0	0	0	1
New York	10	42	48	17	10	5	6	2	12	3	0	1	156
North Carolina	3	4	22	1	0	0	0	2	0	0	0	1	33
North Dakota	29	48	22	15	23	23	18	13	51	27	18	6	293
Ohio	2	79	88	20	3	0	4	1	9	4	0	1	211
Oklahoma	0	1	0	0	0	0	0	0	0	0	0	0	1
Oregon	0	29	9	1	0	2	0	14	0	0	1	0	56
Pennsylvania	9	39	42	2	1	1	0	1	1	0	0	0	96
Rhode Island	0	5	7	0	0	0	0	0	0	0	0	0	12
South Carolina	1	0	15	0	0	0	0	4	0	0	0	0	20
South Dakota	15	52	19	5	10	16	3	3	10	11	8	2	154
Tennessee	0	2	22	0	0	0	0	0	0	0	0	0	24
Texas	0	0	0	0	0	0	0	4	0	0	0	0	4
Utah	0	9	3	0	1	0	0	5	0	0	0	0	18
Vermont	6	18	12	3	4	2	9	3	3	2	0	0	62
Virginia	2	4	21	1	0	0	1	0	0	0	0	0	29
Washington	4	32	6	4	11	6	1	13	4	1	1	1	84
West Virginia	2	3	16	0	0	1	0	0	0	0	0	0	22
Wisconsin	10	111	27	30	23	21	32	2	27	2	9	7	301
Wyoming	0	12	4	1	0	0	0	4	0	0	0	0	21

TABLE XI.—*Total number of days on which auroras occurred.*

State.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Alabama	0	0	1	0	0	0	0	0	0	0	0	0	1
Arizona	0	1	0	0	0	0	0	0	0	0	0	0	1
Arkansas	0	0	1	0	0	0	0	0	0	0	0	0	1
California	0	4	0	1	0	0	0	2	0	0	0	0	7
Colorado	2	8	4	0	0	0	0	2	0	1	0	1	17
Connecticut	3	3	2	2	1	0	2	1	1	0	0	0	15
Delaware	0	2	3	1	0	0	4	0	2	4	0	0	16
Dist. of Columbia	1	1	1	0	1	0	0	0	0	0	0	1	5
Florida	0	0	0	0	0	0	0	0	0	0	0	0	0
Georgia	0	0	1	0	0	0	0	1	0	0	0	0	2
Idaho	1	3	1	1	1	0	1	3	1	0	0	0	12
Illinois	1	5	4	1	2	1	1	0	3	0	0	0	18
Indiana	2	4	2	1	0	1	2	2	1	0	0	4	19
Indian Territory	0	0	0	0	0	0	0	0	0	0	0	0	0
Iowa	2	7	2	6	5	2	5	6	5	2	6	1	49
Kansas	2	2	3	0	0	1	1	2	2	0	1	0	14
Kentucky	1	3	1	0	1	0	0	0	0	0	0	0	6
Louisiana	0	0	0	0	0	0	0	1	0	0	0	0	1
Maine	5	8	3	7	3	5	4	1	3	4	3	1	47
Maryland	2	2	1	1	3	0	1	0	0	0	2	0	12
Massachusetts	5	6	8	4	4	0	8	1	3	2	1	1	43
Michigan	2	8	3	6	2	7	5	1	2	3	0	0	39
Minnesota	9	16	13	12	12	11	12	9	14	11	8	3	130
Mississippi	0	0	1	0	0	0	0	2	0	0	0	0	3
Missouri	3	10	2	0	0	0	1	1	1	1	0	0	18
Montana	5	8	5	5	5	4	7	2	8	6	4	2	61
Nebraska	3	5	4	1	0	1	3	1	6	3	2	0	29
Nevada	0	0	2	0	0	1	0	0	0	0	0	0	15
New Hampshire	6	10	5	8	13	6	9	5	5	3	3	0	73
New Jersey	3	10	2	2	3	1	2	1	1	0	0	1	26
New Mexico	0	1	0	0	0	0	0	0	0	0	0	0	1
New York	3	7	5	8	8	4	2	1	5	2	0	1	46
North Carolina	1	4	1	1	0	0	0	1	0	0	0	1	9
North Dakota	10	12	13	10	8	9	8	6	12	16	13	6	123
Ohio	2	6	3	6	3	0	2	1	2	4	0	1	33
Oklahoma	0	1	0	0	0	0	0	0	0	0	0	0	1
Oregon	0	3	2	1	0	2	0	2	0	0	1	0	11
Pennsylvania	6	7	2	1	1	1	0	1	0	0	0	0	20
Rhode Island	0	1	1	0	0	0	0	0	0	0	0	0	2
South Carolina	1	0	1	0	0	0	0	1	0	0	0	0	3
South Dakota	7	9	7	4	7	8	2	2	6	8	6	2	68
Tennessee	0	2	3	0	0	0	0	0	0	0	0	0	5
Texas	0	0	0	0	0	0	0	1	0	0	0	0	1
Utah	0	2	2	0	1	0	0	2	0	0	0	0	7
Vermont	3	4	6	2	3	2	6	3	1	1	0	0	31
Virginia	2	2	2	1	0	0	1	0	0	0	0	0	8
Washington	2	4	3	2	10	6	1	7	4	1	1	1	40
West Virginia	2	2	1	0	0	1	0	0	0	0	0	0	6
Wisconsin	2	16	5	9	7	11	8	2	10	2	7	7	86
Wyoming	0	2	4	1	0	0	0	2	0	0	0	0	9

Chart I. Mean Annual Pressure, Temperature, and Resultant Winds for 1894.

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Statute Miles.

Chart II. Annual Maximum and Minimum Temperatures, 1894.

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maximum Temperature
minimum "
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Chart III. Annual Precipitation, 1894

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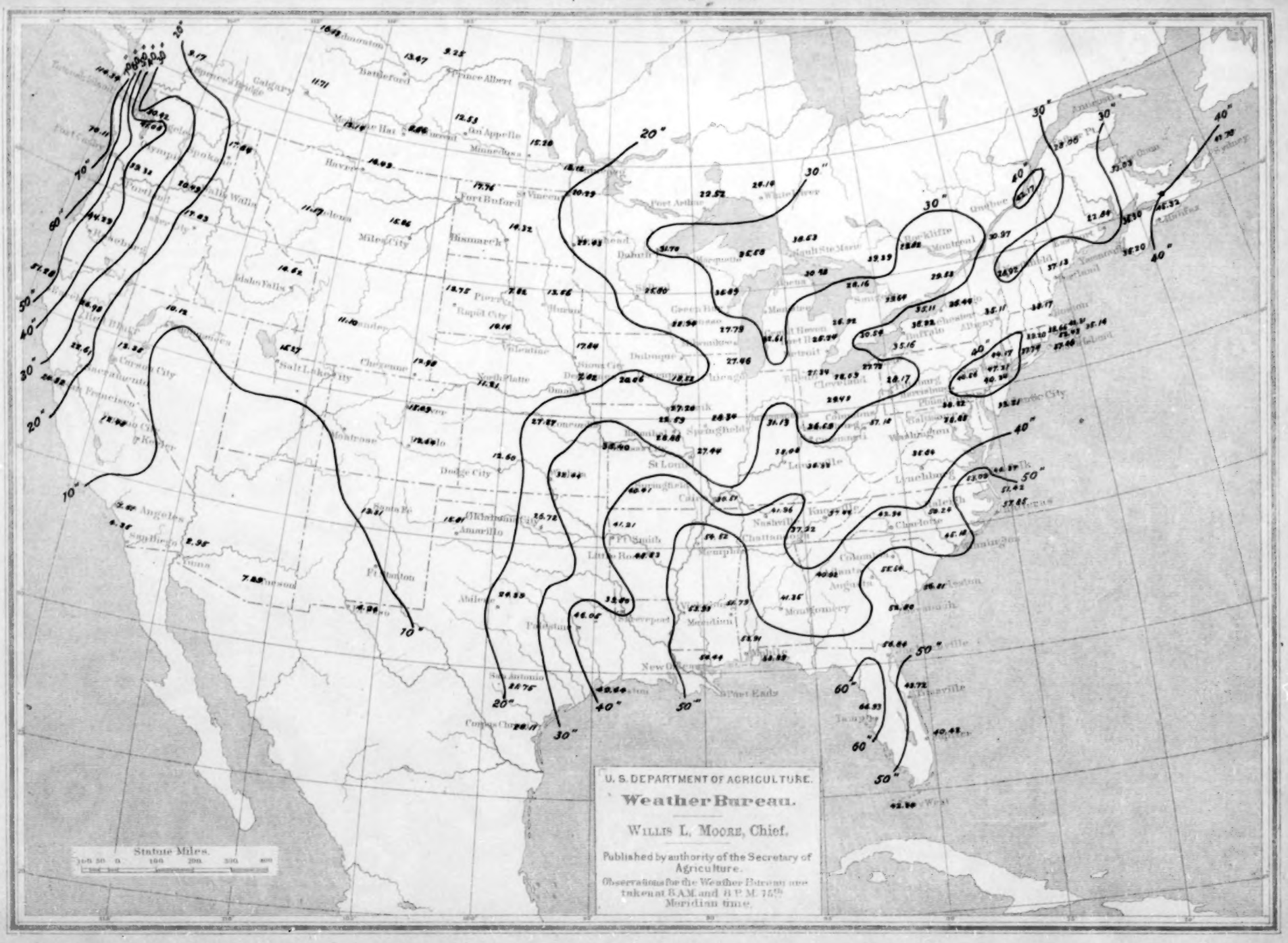
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PREPARED BY DIRECTION OF
WILLIS L. MOORE,
CHIEF OF WEATHER BUREAU.

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All communications relative to the Monthly Weather Review should be addressed to the "Chief of Weather Bureau."